Potential Help-Seeking Barriers For Working Men From Low Decile Areas

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Abstract

There is a growing area of research investigating the relationship between hearing impairment and deprivation, however this has not been investigated in New Zealand. This study seeks to see if there are barriers to seeking hearing services for men of a specific socioeconomic position in Christchurch. Twelve participants were recruited and semi-structured interviews were conducted using the Hearing Beliefs Questionnaire (Saunders G. H., Frederick, Silverman, & Papesh, 2013). Overall, participants thought they were susceptible to hearing impairment and were aware of how severe the consequences could be. Participants thought there were benefits of amplification for hearing impairment under certain conditions. All participants identified barriers to help-seeking for hearing services and amplification. Most participants identified cues that would help them seek help for hearing impairment and believed that they were capable of accessing the serviced if they wanted to.

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List of Abbreviations

APD – Auditory Processing Disorder

AR – Audiologic Rehabilitation

CHL – Conductive Hearing Loss

CI – Cochlear Implant

CP – Communication Partner

CPs – Communication Partners

FM – Frequency Modulation

GP – General Practitioner

GPs – General Practitioners

HA – Hearing Aid

HAs – Hearing Aids

HATs – Hearing Assistive Technologies

IHCs – Inner Hair Cells

HBM – Health Belief Model

HBQ – Hearing Beliefs Questionnaire

HHIA – Hearing Handicap Inventory for Adults

HHIE – Hearing Handicap Inventory for the Elderly

HHIE-S Hearing Handicap Inventory for the Elderly – Screening version

HI – Hearing Impairment

IMALD – Index of Multiple Area-Level Deprivation

KAB – Knowledge, Attitudes, and Behaviours

NZDep – New Zealand Deprivation Index

NZiDep – New Zealand Index of Socioeconomic Deprivation for Individuals

NZDep2001 – New Zealand Deprivation Index 2001

NZDep2006 – New Zealand Deprivation Index 2006

NZDep2013 – New Zealand Deprivation Index 2013

OHCs – Outer Hair Cells

QoL – Quality of Life

SHL – Sensory Hearing Loss

SHLs – Sensory Hearing Losses

SoC – Stages of Change

SOS-HEAR – Significant Other Scale for Hearing Disability

STHP – Screening Test for Hearing Problems

UNHSP – Universal Newborn Hearing Screening Programme

URICA – University of Rhode Island Change Assessment

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1. Literature Review

1.1. Introduction

The World Health Organisation reported that there were 360 million people with disabling hearing impairment (HI) worldwide (World Health Organisation, 2012), which comprises about 5% of the world's population. However, the distribution of disabling HI is not equally distributed around the world. Some regions of the world have almost double the prevalence of disabling HI as the "high income" (World Health Organisation, 2012) region that includes countries like New Zealand, Australia, the United States, Canada and the United Kingdom (World Health Organisation, 2012). This is in part due to the distribution of HI related specialists (e.g., ear, nose and throat specialists, audiologists, speech language pathologists, educators of the deaf and others), where high income and high middle income countries have more specialists per capita than other regions (World Health Organisation, 2013).

This disparity in the distribution of HI is not only seen at an international level, it is also seen at a local level with a number of different studies from different countries showing this to be the case (Kubba, MacAndie, Ritchie, & MacFarlane, 2004; Benova, Grundy, & Ploubidis, 2014; Feder, David, Ramage-Morin, McNamee, & Beauregard, 2015; Mehra, Eavey, & Keamy, 2009).

However, there does not appear to be any literature showing this to be the case in New Zealand. The scope of this thesis will not be able to replicate what other studies have done internationally, but will investigate a population of men from a specific socioeconomic position to see if there are barriers that stop them from help-seeking for HI. If there are barriers, to identify what those barriers are through a qualitative interview.

1.2. The Human Auditory System

1.2.1. Outer and Middle Ear

Sound in the form of acoustic pressure waves travel and are collected by the outer ear (Yost, 2007). The outer ear consists of the pinna and the ear canal. The pinna is the visible part of the ear and the small bumps and grooves help the sound filter into the concha, which then becomes the external auditory meatus (or ear canal) (Bess & Humes, 2009; Yost, 2007). The lateral third of the external auditory meatus consists of cartilage (Bess & Humes, 2009; Musiek & Baran, 2007) that has glands and is lined with hairs. These glands secrets cerumen (also called wax), a substance that helps to protect the ear from potential foreign bodies (Bess & Humes, 2009; Møller, 2013). The rest of the ear canal is made of hard osseous bone which forms part of the skull and the entire external auditory meatus is lined with skin (Bess & Humes, 2009; Yost, 2007).

The middle ear starts where the ear canal meets the tympanic membrane. When the sound travels down the ear canal and hits the ear drum it is converted into mechanical energy (or vibrations). The tympanic membrane itself is an oval membrane made up of two main parts, the larger pars tensa, and the smaller, upper part called the pars flaccida (Møller, 2013).

The middle ear cavity (or tympanum) is the space between the outer and inner ear, which has an approximate volume of 2 cm^3 in an adult. The middle ear cavity can be thought to have six boundaries: (1) The tympanic membrane, (2) the promontory (or bony wall) (i.e., the boundaries between the outer and inner ear, respectively), (3) The tegman tympani (the superior boundary) that separates the cavity from the brain, (4) The inferior boundary which is formed by the tympanic plate of the temporal bone, (5) The carotid wall (forms the anterior wall), which is a thin plate where the Eustachian tube enters the middle ear cavity, and (6) the mastoid wall (forming the posterior wall), which is formed by parts of the temporal bone (Bess & Humes, 2009; Yost, 2007; Musiek & Baran, 2007).

Entering the carotid wall is the Eustachian tube, which is a tube that connects to the middle cavity to the nasopharynx. The middle ear works most efficiently when the air pressure in the tympanum is close to ambient pressure, and this is allowed to happen by the opening and closing of the Eustachian tube (Møller, 2013).

There are three small bones in the middle ear called the ossicles: the malleus, incus and stapes. The malleus is connected to the middle of the tympanic membrane and connects to the incus. The incus then connects to the stapes (the smallest bone in the body), where the stapes footplate covers the bony wall of the oval window (Musiek & Baran, 2007; Møller, 2013; Yost, 2007). The ossicles are suspended in the middle cavity by axial ligaments that protrude from the posterior and anterior walls of the cavity (Bess & Humes, 2009). There are two muscles in the middle ear, the tensor tympani and the stapedius muscle. When innervated both the tensor tympani and the stapedius muscle help to stiffen the ossicular chain reducing the amount of energy passing from the outer ear to the inner ear (Musiek & Baran, 2007; Møller, 2013; Bess & Humes, 2009).

The middle ear acts as an acoustic transformer to overcome this large impedance difference between air and the inner ear fluids. The ossicles are arranged in a way that allows a frequency dependent increase of up to 33 dB SPL to the signal that first entered the ear canal (Musiek & Baran, 2007; Bess & Humes, 2009).

1.2.2. Inner Ear and Auditory Neural System

The inner ear can be divided into three main sections: the semicircular canals, the vestibule and the cochlea. There are three semicircular canals, the superior, posterior and lateral canals. These canals are essentially orthogonal to each other. Each semicircular canal detects changes in rotational movement in a different plane (Day & Fitzpatrick, 2005). The vestibule consists of the utricle and the saccule which detects linear acceleration (Day &

Fitzpatrick, 2005). The semicircular canals and the vestibule are part of the vestibular system, which helps to maintain balance and posture (Bess & Humes, 2009; Yost, 2007).

The third section of the inner ear is the cochlea, a snail like shell which houses the hearing organ, called the organ of Corti (Musiek & Baran, 2007; Møller, 2013).

There are three fluid filled chambers in the cochlea, scala vestibuli, scala tympani and scala media. Scala media is the middle chamber with scala vestibuli above it (separated by Reissner's membrane) and scala tympani is below it, which is separated by the basilar membrane (Musiek & Baran, 2007; Møller, 2013) the structure that supports the organ of Corti.

At the border of the middle and inner ear is the stapes footplate which transfers mechanical energy to the oval window, this causes a pressure wave to form in scala vestibuli. This wave travels from the basal end of the cochlea to the apex, through a small opening (that connects scala vestibuli and scala tympani) to the base of scala tympani finishing at the round window (Bess & Humes, 2009; Musiek & Baran, 2007; Yost, 2007). The pressure wave that caused fluid to be displaced in scala vestibuli, also causes fluid to be displaced in scala media. This movement of fluid in scala media will cause particular areas of the frequency tuned basilar membrane to move, which causes the sensory cells in the organ of Corti to respond (Bess & Humes, 2009).

The organ of Corti has two types of sensory cells, the inner hair cells (IHCs) and outer hair cells (OHCs). The OHCs are arranged in three to five rows in the middle of the basilar membrane, compared to the IHCs that form a single row in the basilar membrane. Although the IHCs are smaller in number they are more structurally robust than OHCs. Both types of hair cells have stereocilia units that allow the hair cell to either depolarise or hyperpolarise (Musiek & Baran, 2007; Møller, 2013). At the bottom of each hair cell there are nerve fibres. When a hair cell depolarises, the afferent nerve fibres send neural signals from the hair cell up

the brainstem to the auditory nervous system. These hair cells can also receive neural signals via the efferent auditory nerve fibres (Musiek & Baran, 2007).

1.3. Hearing Impairment

1.3.1. Types of Hearing Impairment

There are five main types of HI and they will be briefly discussed here: conductive hearing loss (CHL), sensory hearing loss (SHL), retrocochlear hearing loss, auditory dys-synchrony and auditory processing disorder (APD).

CHL includes disorders of both the outer and middle ear, which normally causes dysfunction or compromises the air conduction pathway (Neumann & Stephens, 2011; Musiek & Baran, 2007). On an audiogram, this is classically observed when hearing sensitivity tested by air conduction is reduced, but the hearing sensitivity tested by bone conduction is within normal limits. Examples of a CHL include: otitis media, atresia, occlusion of the ear canal due to foreign bodies or cerumen, ossicular discontinuity and otosclerosis (Bess & Humes, 2009).

SHL, especially for adults is probably the most common type of HI, and this typically results from underlying cochlea pathology (Bess & Humes, 2009). This could be due to loss of OHCs, which affects the natural amplification system. This reduces the energy of the incoming travelling wave and affects how an individual would perceive it. Alternatively, this his could be loss of IHCs, which means the auditory nerve cannot be activated (Dimitriadis, Vlastarakos, & Nikolopoulos, 2011). In contrast to a CHL, both the air conduction and bone conduction sensitivity will have decreased. SHL can result from age (presbycusis), noise exposure (noise induced hearing loss), ototoxicity (drugs), or viral and bacterial diseases. It is possible to also have a mixed hearing loss, where an individual's hearing status is partially conductive and partially sensory (Bess & Humes, 2009).

Recent advances in science and diagnostic approaches are helping to differentiate between cochlear and retrocochlear pathology (Musiek & Baran, 2007). Retrocochlear pathology indicates damage to the nerve fibres in the auditory pathway anywhere from the internal auditory meatus to the brain. Examples of retrocochlear pathology are tumours on the nerves, multiple sclerosis, or being born without a cochlear nerve (Bess & Humes, 2009).

Audiologists are now diagnosing auditory dys-synchrony disorders. Disorders that cause dysfunction to the auditory system in the brain. The cochlea is otherwise operating normally, but the transmission of neural information through the auditory pathway is disrupted. In auditory dys-synchrony the auditory nerve itself may or may not be affected (Kumar & Jayaram, 2011; Musiek & Baran, 2007).

APD is the abnormal representation of auditory information which contributes to a disorder of the central auditory nervous system (Chermak, Bellis, & Musiek, 2013). Like auditory dys-synchrony, APD is not typically due to any peripheral hearing loss, but a processing dysfunction. APD is hard to diagnose because it often occurs with (but not because of) dysfunctions of other modalities. However, in the past 20 years, there have been many advances in neuroscience, which has helped to explain why APD often occurs with other difficulties in learning, attention and language (Chermak, Bellis, & Musiek, 2013).

1.3.2. Impact of hearing impairment

HI is known as an invisible disability, but the impact of HI is anything but invisible (Tye-Murray, 2015). The impact of HI is different depending on what stage of life it affects, and this section will focus on post-lingual acquired HI.

The primary impact of HI is the effect on verbal communication, but there are secondary effects too – like the impact on the physical, social and psychological aspects of life (Schow & Nerbonne, 2002; Tye-Murray, 2015). For the individual with HI, there may be an increasing sense of frustration or anger as everyday normal activities like a chat with

people in the street, is no longer an easy activity to participate in (Tye-Murray, 2015; English, 2002). Other emotions that are experienced include stress, fear, resentment, feeling weak or old, anxiety, and grief. These emotions can affect an individual's self-image, as they compare how things are now, to what they used to be (English, 2002; Johnson, 2012; Tye-Murray, 2015). The impact of HI may be compounded if other symptoms like tinnitus also occur (Johnson, 2012).

Individuals with HI will likely experience communication breakdown and at times feel like they are being excluded from conversations. These situations can lead to misunderstandings, embarrassment, arguments or avoiding tactics. A consequence of this is a decrease in regular social activities, even ones they really enjoy because they may lose interest or find the listening environment too stressful. This could lead to social isolation, which can lead to depression (English, 2002; Tye-Murray, 2015).

The impact of HI reaches to the people around the individual with HI, and the ones impacted most are the communication partners (CPs), often called significant others. CPs include people who are in regular contact with the person with HI, for example, a spouse or partner, family members, close friends, colleagues or carers (Manchaiah, Stephens, & Lunner, 2013). CPs, particularly spouses or partners, carry the largest responsibility as they often assume the role of "hearing" for the person with HI. They will explain to the individual with HI what was missed from a conversation, be responsible for telephone-related tasks, and fix any miscommunications (English, 2002). The CPs closest to the individual with HI may also take the brunt of the stress experienced by HI, perhaps being accused of not speaking clearly or excluding them from conversations. Serious strains can be placed on relationships if frustration from a communication breakdown is perceived by the individual with HI as a rejection of them. This could lead to resentment and even less communication from the

individual with HI (English, 2002), sometimes the stress can become too much, leading to broken relationships (Hogan, 2001).

1.3.3. Interventions

There are many different interventions for hearing loss depending what is appropriate for the situation. In this short section different interventions will be briefly reported on: hearing aids (HAs), surgery, surgical amplification, hearing assistive technologies (HATs), communication strategies training, and counselling.

The provision of HAs is widely used as a solution to HI. Basically, HAs are devices that amplify acoustic energy. Most HAs amplify sound in a frequency specific manner, giving more gain to sounds where an individual has reduced hearing sensitivity and giving less gain to sounds where that person has good hearing sensitivity, and do this with minimal distortion (Yost, 2007; Dimitriadis, Vlastarakos, & Nikolopoulos, 2011). HAs come in many different styles including behind-the-ear, in-the-ear, completely-in-the-canal, bone-conduction, and CROS (Contralateral Routing of Signals). However, many clinical considerations are required when selecting HAs that are the most appropriate for an individual; it is not as simple as picking the one an individual likes best (Bess & Humes, 2009; Dimitriadis, Vlastarakos, & Nikolopoulos, 2011).

Medical surgery may be required to correct HI especially for CHL. Most SHLs are permanent so medical treatment is usually not suitable (Musiek & Baran, 2007). Surgeries that may be required to intervene for a CHL include: inserting a ventilation tube for otitis media, removing fixated bone caused by otosclerosis, removing a foreign body or cholesteatoma, or repairing any damage done to the ossicles.

Combining two interventions mentioned above, there are a few amplification systems that require surgery for very specific types of HI. These include bone-anchored-hearing-aids (for significant CHL where conventional HAs are not suitable), cochlear implants (CIs) (for

people who are deaf or have profound hearing loss due to loss of many cochlear hair cells) and auditory brainstem implants (for people who have no auditory nerve) (Møller, 2013; Dimitriadis, Vlastarakos, & Nikolopoulos, 2011).

HATs are different types of devices designed to improve the signal-to-noise ratio of a speech signal for a hearing impaired person when their current hearing devices are not adequate. This includes classroom amplification systems, wireless systems, induction loops and direct connectivity to iPhones (Kim & Kim, 2014).

Training people to use communication strategies (CS) can happen in a variety of ways – from giving people with HI an informational pamphlet, to courses that meet on a weekly basis. CS training is normally one aspect of a larger audiologic rehabilitation (AR) programme. Where possible, a CS programme will be tailored to suit and meet the communication needs of the individual or the group (Tye-Murray, 2015). An individual with HI is trained to look for factors that they can change in a conversation to improve their chances of understanding what was spoken (Nerbonne & Schow, 2002). The training could include role-playing, pen and paper exercises, and group discussions (Tye-Murray, 2015).

Counselling is another tool in the AR toolbox. In general, counselling in audiology is helping and supporting the person with HI and their CPs through issues relating to participation and quality of life (QoL) (Atkins, 2001; Boothroyd, 2007). This could include issues like the nature and impact of HI, identifying any maladaptive attitudes or behaviours, discussing why intervention is necessary, as well as talking through expectations and goals they may have about AR (Tye-Murray, 2015; Atkins, 2001; Kaplan, 2001).

1.3.4. Outcome of Intervention

Hearing rehabilitation is measured in two main ways, outcome assessments (objective tests measuring auditory ability and understanding) and subjective measures (self-reported views of the impact of the rehabilitation) (Dillion, 2012). In the context of HAs, this has not

always been straight-forward, and clinicians are encouraged to think about what they are trying to measure (Saunders G. H., Chisolm, & Abrams, 2005; Cox, Alexander, & Gray, 2007). This section will very briefly examine some outcomes of some of the interventions mentioned in the previous section.

In Australia, older adults who had received government funded HAs (in the previous 3 to 6 months) were given surveys to measure their satisfaction (Uriarte, Denzin, Dunstan, Sellars, & Hickson, 2005). Overall, it was found that the people who had received HAs through this government scheme were satisfied with their HAs. When comparing it to other studies, their results supported the "honeymoon effect" (Uriarte, Denzin, Dunstan, Sellars, & Hickson, 2005, p. 394) where people are generally very happy with their outcome initially, but as time goes on more negative side-effects become noticeable. The study also found that perceived severity, amount of previous HA experience and style of HA influenced satisfaction levels (Uriarte, Denzin, Dunstan, Sellars, & Hickson, 2005). Another study investigating veterans receiving HAs for the first time used three surveys to measure the outcomes of HAs. The study found that there was increased communication and participation in the first 2 months after intervention and the benefit of HAs, which was stable until 6 months after intervention. (McArdle, Chisolm, Abrams, Wilson, & Doyle, 2005).

As mentioned above, surgical solutions for HI normally address pathologies of the middle ear. There is always a risk of complications with surgery, however surgical technique does improve and change over time. In ossiculoplasty surgeries Cox, Russell and Dornhoffer (2016) showed that they were able to close the air-bone-gap to less than 20 dB in 63% in of surgeries on adults and 58% of surgeries on children; where only 10% of patients required revision surgeries, and half of those revision surgeries occurred more than 5 years after the initial surgery (Cox, Russell, & Dornhoffer, 2016). Although this study showed some

variability in surgical outcomes, another study (Philippon, et al., 2013) showed no complications.

To remove cholesteatoma in children is particularly difficult because of the need to preserve hearing. Canal wall-up mastoidectomy has been shown to be a useful technique. Of over 250 patients almost 50% required second stage surgery, however hearing preservation was excellent and remained steady for over 5 years (Piccirillo, Rao, D'Orazio, & Sanna, 2016).

Some children adapt to CIs better than others. Britz, Fry and Owston, (2010) found that children who were implanted under the age of 2 years are able to obtain the necessary auditory skills closer to their normal hearing peers. However, children who were older than 2 years old or had complex needs when they were implanted, and tended to develop these auditory skills slower (Britz, Fry, & Owston, 2010). Since the implementation of the Universal Newborn Hearing Screening Programme (UNHSP), Philips and colleagues (2009) have found that earlier detection of HI lead to earlier intervention, leading to better auditory reception and speech intelligibility (Philips, et al., 2009)

Although CIs are often associated with very young children, older adults can also benefit from them too, as age is not a contradiction for implantation (Roberts, Lin, Herrmann, & Lee, 2013). Patients who are implanted over 80 years old demonstrate significant hearing gains, but do not perform as well as adults in their 60s. Another consideration is that older patients are at no greater risk of disequilibrium or other post-operative complications (Roberts, Lin, Herrmann, & Lee, 2013).

HATs such as sound-field systems and personal frequency-modulated (FM) systems are often used by children, partly because they require a better signal to noise ratio than adults and there are positive benefits when used in the classroom or at home (Dillion, 2012). Although many of these studies have been done with older children, relatively little study has been done with pre-schoolers. However, Nelson, Poole and Muñoz (2013) have generally

found that there was improved speech, language and academic advantages to using HATs with pre-schoolers (Nelson, Poole, & Muñoz, 2013).

In developing countries like Pakistan, there were improvements in students' academic achievement (measured on a language test) and QoL (measured by a survey given to their parents) when students with HI could use HATs (Farooq, Aasma, & Iftikhar, 2015). Low technology HATs (e.g., HAs, and infrared systems) and high technology HATs (e.g., CIs, FM systems and loop systems) were trialled with 100 students (with 60 parents giving feedback). All HATs made statistically-significant improvements to the students' academic achievements. The best academic results came from students using FM, infrared and loop systems (Farooq, Aasma, & Iftikhar, 2015), as well as students who used more than one device. It should be noted that 60% of this sample used HAs, while only a few students had access to other assistive devices (Farooq, Aasma, & Iftikhar, 2015). McPherson (2014) also outlined the need for amplification in developing countries and explained some initiatives that they were undertaking to improve access to hearing technology.

CS training is commonly conducted as courses that run over several weeks. Wilson and colleagues (1998) found the most commonly used CS was asking for a repetition, whether this was because participants found this the most effective in repairing a communication breakdown or if they did not feel comfortable using another CS is unknown. Although less commonly used "telling the speaker about hearing problems and requesting reduction of background noise" (Wilson, Hickson, & Worrall, 1998, p. 34) proved successful on all occasions of use. A review by Sweetow and Palmer (2005) investigated two general types of CS training; analytic and synthetic. Analytic training helps people with HI identify speech sounds rather than words or sentences. Synthetic training use different CS to obtain the meaning of what has been said. The review found that in post-intervention outcomes there were significant improvements in at least one outcome measure (e.g., consonant recognition,

speech perception and self-perception) for both analytic and synthetic CS training (Sweetow & Palmer, 2005).

Golder and colleagues (2010) in their qualitative research of CS training in an AR group found that improved understanding of CS was associated with improved social relationships. This may be related to better communication and having the confidence to take control of different hearing situations. (Golder, Walsh, Buchanan, & Lind, 2010). Hallberg, Hallberg and Kramer (2008) found that there was a significant association between low use of maladaptive CS and higher QoL. Higher QoL was also associated with high use of non-verbal CS. A randomized control trial by Thorén and colleagues (2011) found that two types of online CS interventions (intensive online programme and discussion forums) were able to significantly reduce subjective participation restrictions and activity limitations. After the intervention, participants in the intensive online programme group also had reduced scores on a survey measuring depression (Thorén, et al., 2011). These studies highlight that CS not only helped to improve communication, but at the very least, improved QoL in the short-term, which agrees with conclusions of Hawkins' review (2005) on counselling in AR.

There are benefits when CS training is managed effectively. Some challenges associated with CS training include time required, limited training in conducting a CS programme, lack of resources (including financial) and the amount of materials required (Sweetow & Palmer, 2005; Makhoba & Joseph, 2016).

Counselling in audiology involves remediating the psychological effects of HI on people. Counselling can be a way to restore confidence, and help people with HI reintegrate and better handle the demands of their lives (Kaplan, 2001). During group AR, counselling helped individuals with HI feel accepted, talk about their experiences, and make changes to their attitudes and behaviors (Warner-Czyz, 2000). Counselling helped reduce the perceived handicap of an individual's HI (Warner-Czyz, 2000).

When participants were counselled before and after being fit with HAs they were found to use their HAs easily, more effectively, and for longer periods of time compared to people that did not receive pre- and post-fitting counselling (Brooks & Johnson, 1981; Brooks, 1979). This agrees with the results of a study conducted by Abrams and colleagues (1992). There were two intervention groups in their study, both groups received HAs, but only one group was part of a post-fitting AR program. A survey was completed 2 months after the HAs were fitted and it showed that the participants that received the HA and completed the AR program perceived a smaller hearing handicap than those who just got HAs (Abrams, Hnath-Chisolm, Guerreiro, & Ritterman, 1992).

As part of AR, it is important not only to address the needs of the individual with HI, it is also important to meet the needs of CPs. As HI affects communication with everyone and CPs have a unique perspective that is different to the audiologist's (Manchaiah, Stephens, & Lunner, 2013). Giving CPs an opportunity to tell their story can help the overall rehabilitation process as the audiologist addresses the needs of the individual with HI and their CPs in the AR program (Manchaiah, Stephens, & Lunner, 2013; Tye-Murray, 2015; Hallberg, Hallberg, & Kramer, 2008).

Brooks and colleagues (2001) investigated the emotional effects on an individual with HI and their CP before and after the use of HAs. Before HAs, one-to-one conversation, group conversations and listening to television were difficult. After HAs, the feelings of frustration, being fed up, irritation (in all situations) and embarrassment (during group conversations) showed marked decreases for both the person with HI and their CP (Brooks, Hallam, & Mellor, 2001). This agrees with a study by Stark and Hickson (2004) that revealed after the provision of HAs, there was an improvement in QoL for both the individual with HI and the CP. A review highlights these findings when it reported that the consequences of HI can have damaging effects on an individual, and many of these effects carry over to the primary CP

leading to a decreased QoL (Kamil & Lin, 2015). However, hearing intervention was related to improved communication, increased social activity and QoL (Kamil & Lin, 2015).

1.4. Help-Seeking for Hearing Impairment

1.4.1. Rates of Help-Seeking

The previous section showed the negative consequences of untreated HI on communication and psychosocial function. The reality is that many adults with HI do no seek professional help therefore, rehabilitation services go underutilised (Meyer & Hickson, 2012). It is estimated that 80% of people who think they have HI do not seek help in the first 5-10 years after they first detect a change in hearing (Saunders G. H., 2015; Meyer & Hickson, 2012).

In the United States, it is estimated that about one-third of individuals over 60 and about two-thirds over 70 years of age have HI (Meyer & Hickson, 2012; Ham, Bunn, Khan, & Hickson, 2014). Of those with HI, less than one-quarter of people who could benefit from HAs have them (Schulz, et al., 2016).

An Australian study estimated that 39% of adults with HI that were aged 50 years and older, do not seek help for HI (Meyer & Hickson, 2012) and about 62% do not have HAs (Meyer, Hickson, Lovelock, Lampert, & Khan, 2014; Meyer & Hickson, 2012).

A Dutch study reported that of the 40% of people aged 55 years and over reported having hearing problems, but only 16% sought help for those hearing problems (Duijvestijn, et al., 2003). A potential reason for these statistics is that HI is normally acquired gradually over time so some individuals may have learned to cope with it, sometimes by withdrawing from social events (Duijvestijn, et al., 2003). Others say it is financial, however even in countries with free hearing health care, similar statistics are observed (Saunders G. H., Frederick, Silverman, Nielsen, & Laplante-Lévesque, 2016a). The next section reviews the literature of possible factors that influence hearing help-seeking.

1.4.2. Factors Affecting Help-Seeking

The aim of identifying factors that affect help-seeking for HI is to give audiologists and other health professionals the necessary information to make rehabilitation services more assessable (Meyer & Hickson, 2012). There are factors that help encourage an individual to help-seeking and there are other factors that discourage help-seeking.

Factors that discourage help-seeking for HI include individuals having a lack of resources (e.g., time, money, energy), the cosmetic features of HAs, the belief that HAs will not help the individual with their HI, an individual thinking that their HI is not "bad enough" or just a normal part of aging (Laplante-Lévesque, et al., 2012; Carson, 2005; Laplante-Lévesque, Hickson, & Worrall, 2010; Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010). An example of this is what Humphrey and colleagues (1981) observed; if people first experienced HI after the age of 65 years, they were less likely to seek hearing services, as it was seen as a normal part of aging. The consequences of this was a decrease in their normal activities leading to social isolation (Humphrey, Herbst, & Faurqi, 1981).

Another discouraging factor was a perceived lack of professional information about HAs from health professionals and the invisibility of the field of audiology within the health system (Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010; Knudsen, Nielsen, Kramer, Jones, & Laplante-Lévesque, 2013). There are potentially misunderstandings as well as a lack of knowledge about HI and what can be done through hearing rehabilitation (Knudsen, Nielsen, Kramer, Jones, & Laplante-Lévesque, 2013; Laplante-Lévesque, et al., 2012).

Factors that have been found to encourage individuals to seek help for HI include: publicity that raises awareness about HI, specific events where a person with HI has experienced difficulties, comments from other people about an individual's hearing ability, changes in health status, new roles in life, or an observed decline of hearing ability over time (Duijvestijn, et al., 2003; Laplante-Lévesque, et al., 2012). Several studies have found that the

four frequency (0.5, 1, 2, and 4 kHz) pure-tone average was the only audiological factor associated with help-seeking and even then, it was not as important as the non-audiological factors (Meyer, Hickson, Lovelock, Lampert, & Khan, 2014; Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010). An individual's attitude towards HAs appears to be one of the most important factors in help-seeking, as well as perceived ability to manage a HA (Meyer, Hickson, Lovelock, Lampert, & Khan, 2014).

Across multiple studies, one of the greatest factors of help-seeking was self-perceived HI. Although, Duijvestijn (2003) observed that awareness of HI alone was not enough to help-seek. Therefore, it may not be the HI per se, but the affect the HI had on their life. If an individual thought their HI was severe, it was more likely to impact their daily life. The consequences of this might be limiting their normal activities or their participation in those activities (Duijvestijn, et al., 2003; Laplante-Lévesque, Hickson, & Worrall, 2010; Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010; Meyer & Hickson, 2012; Meyer, Hickson, Lovelock, Lampert, & Khan, 2014; Saunders G. H., Frederick, Silverman, Nielsen, & Laplante-Lévesque, 2016a). If an individual has family members that have experience with HI, this also promotes help-seeking (Carson, 2005).

Up to this point it appears that identifying factors that influence help-seeking is a relatively straight-forward topic. However, as Meyer and colleagues observed, the nature of help-seeking for HI is complex (Meyer, Hickson, Lovelock, Lampert, & Khan, 2014) because an individual will need to consider a wide range of different factors. For example, resources (e.g., time and money), the current state of their hearing, how their hearing is impacting their life, and their beliefs about the effectiveness of hearing rehabilitation (Laplante-Lévesque, et al., 2012). Two factors that have been identified in multiple studies as factors that could influence a person with HI to seek help or not is the general practitioner (GP) and CPs (Duijvestijn, et al., 2003; Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010; Knudsen,

Nielsen, Kramer, Jones, & Laplante-Lévesque, 2013; Meyer & Hickson, 2012; Meyer, Hickson, Lovelock, Lampert, & Khan, 2014; Carson, 2005).

The GP has a crucial role in a person's hearing rehabilitation because they will make decisions about a person's referral pathway or initial rehabilitation strategy. Gilliver and Hickson (2011) found that GPs normally have a good understanding of how individuals are affected by HI. However, the study also points out that many GPs have doubts about how effective rehabilitation for HI is for older adults. For example, GPs estimated that 46% of older adults they saw had HI, but that only 31% of those with HI would benefit from rehabilitation. Another study found that some GPs referred individuals with HI straight to an ear, nose and throat specialist rather than to an audiologist. This may reflect that some GPs do not think HAs are a helpful form of hearing rehabilitation (Meyer & Hickson, 2012). It is hard to know if these actions reflect negative attitudes towards HAs as a form of hearing rehabilitation or if this is a lack of education, or simply not knowing the most appropriate specialist to refer to. In any case this complicates the help-seeking process for the individual with HI (Gilliver & Hickson, 2011; Meyer & Hickson, 2012).

Individuals with HI are more likely to seek help if CPs have a positive attitude toward hearing rehabilitation (Meyer & Hickson, 2012) or if the CPs push or encourage the individual to get their hearing checked (Knudsen, Nielsen, Kramer, Jones, & Laplante-Lévesque, 2013; Duijvestijn, et al., 2003; van der Brink, Wit, Kempen, & van Heuvelen, 1996). The role of family in an individual's journey through hearing rehabilitation is an important one because when faced together, hearing rehabilitation was more accepted (Duijvestijn, et al., 2003). CPs can have great positive effects on an individual's attitude toward hearing help-seeking and rehabilitation, however the reverse is also true that CPs can also have negative effects on help-seeking. For example, individuals are less likely to seek help for HI if their CP tries to minimise the impact of HI (Knudsen, Öberg, Nielsen, Naylor,

& Kramer, 2010). Another study stated that the CP's beliefs about HI and rehabilitation could be more influential than the individual's own attitude towards those things. If the CP's attitudes reinforce HA stigma, this will further delay hearing help-seeking (Meyer, Hickson, Lovelock, Lampert, & Khan, 2014; van der Brink, Wit, Kempen, & van Heuvelen, 1996).

Help-seeking is a constant weighing up of the need for rehabilitation and the consequence of HI, and how that interacts with the influence of CPs, the GP, individual communication needs, and social roles (Knudsen, Nielsen, Kramer, Jones, & Laplante-Lévesque, 2013; Carson, 2005). This idea has been explained thoroughly by Carson (2005), after qualitatively interviewing older women who were experiencing HI. Often help-seeking occurs not from the impairment per se, but to address the inability to function because of the HI. An individual goes through a process of contrasting and comparing the costs versus the benefits of intervention. An individual may contrast and compare their own hearing ability with their vision, what their hearing used to be like and to the hearing ability of their peers. Costs versus benefits is not just about the cost and benefits of HAs or other rehabilitative tools, but about almost every situation. For example, the costs and benefits of a conversation: the benefit of understanding the conversation, perhaps at the cost of asking for a repeat or letting the other person know about their HI. When it reaches a point where the individual can no longer cover the costs of HI, this is when help-seeking may occur (Carson, 2005).

Southall, Gagné and Jennings (2010) have a model of stigma that shares the complexity of Carson's benefits verses costs model, where negative and positive factors impact on an individual's emotional resources. People with HI are sometimes labelled with stereotypes like being less able, old or slow (Southall, Gagné, & Jennings, 2010; Johnson, 2012; Preminger & Laplante-Lévesque, 2013). Stigmatisation of people with HI can lead to difficult social situations and a person's response often is to avoid those situations (Southall, Gagné, & Jennings, 2010; Saunders G. H., Chisolm, & Wallhagen, 2012). The research

consisted of semi-structured interviews with 10 different individuals with acquired HI. There were three themes that arose from the data: (1) a build-up of negative stress, which occurred after the time the participant first noticed their HI. An example of a stress was lack of empathy from friends and family, and finding some routines frustrating because they had become more difficult. (2) Mounting losses (normally losses relating to social life) and unmanageable stress (caused by HI and other stress) led many participants to hit "rock bottom" (Southall, Gagné, & Jennings, 2010, p. 809), which triggered the participant to seek help. (3) A build-up of positive factors created by peer-support groups that allowed a participant to seek help without feeling stigmatised. Southall and colleagues likened the participants' emotional resources to a set of scales, showing the balance of negative stress and positive factors they experienced. If the participant can manage the mix of positive and negative experiences, they were considered to be in relative equilibrium and less likely to seek hearing services. Too many negative stresses might result in the second theme (mentioned above) and potentially seeking help as a result of hitting "rock bottom" (Southall, Gagné, & Jennings, 2010, p. 809) If there were many more positive factors experienced it could lead to the third theme mentioned above, potentially leading to help-seeking with no feeling of being stigmatised. (Southall, Gagné, & Jennings, 2010).

"The Hearing Aid Effect" (Blood I. M., 1997, p. 60) is a phenomenon where individuals are negatively-judged in terms of intelligence, personality, achievement and attractiveness because of the presence of HAs (Blood I. M., 1997; Blood, Blood, & Danhauer, 1977). Since this finding there has been a focus on trying to make HAs smaller so that they cannot be seen, although it should be noted that the concealment of hearing devices has been around since the 19th century (Washington University School of Medicine, 2005). However, even with the improved cosmetic appearance of HAs it was found that the HA effect was still an idea that exists (Johnson, et al., 2005). Another form of the HA effect is based on the looks

of the HAs, the perception that larger HAs are less technologically-advanced compared to smaller, more discrete HAs (Kochkin, 1994; Bevan, 1999). This caused Kochkin to (1994) conclude that the HA industry needs to improve the image of large HAs and audiologists need to emphasise what aids can do for people's HI rather than focus on what they look like.

However, a study by Clucas and colleagues (2012) found that white, young males with HAs or HI did not experience any prejudice from medical students based on the presence of HAs alone (Clucas, Karira, & St. Claire, 2012). The individuals with HAs were treated with the same respect as those without HAs and the conclusion was that people with HAs were respected as much as the respect they showed to the medical students. This suggested that if individuals with HAs expected to be treated poorly and did not show respect to the medical students, they were treated with less respect (Clucas, Karira, & St. Claire, 2012). This supports the argument that the stigma of the HA effect needs to be fought on two fronts, improving public perception and addressing the psychological needs of the individual wearing HAs – as Doggett found with older females (Doggett, Stein, & Gans, 1998; Johnson, 2012). This means any incorrect perspectives about communication difficulties could have an effect on an individual's personal self-esteem (Doggett, Stein, & Gans, 1998).

It is understandable to think that these findings are specific to individual contexts, but Laplante-Lévesque and colleagues (2012) showed that individuals in four different industrialised Western countries (Australia, Denmark, England and the United States) displayed more similar (than dissimilar) hearing behaviours despite quite different hearing services.

Other factors that have been investigated regarding hearing help-seeking, but have not been found to be significant include gender (Saunders G. H., Chisolm, & Wallhagen, 2012; Meyer, Hickson, Lovelock, Lampert, & Khan, 2014; Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010; Carson, 2005), technology use (Ham, Bunn, Khan, & Hickson, 2014; Meyer &

Hickson, 2012), and employment status (Meyer, Hickson, Lovelock, Lampert, & Khan, 2014). Gender not being a significant factor for hearing help-seeking was a surprising result considering other areas of health report that normally woman help-seek more than men (Carson, 2005; Levinson & Ifrah, 2010; Li, et al., 2014; Oliver, Pearson, Coe, & Gunnell, 2005). It is also expected that the help-seeking rates would be different because HI affects men and women in different ways due to their different roles in the community and society (Carson, 2005; del Mar García-Calvente, et al., 2012).

Areas of further research include which parts of personality affect hearing help-seeking (Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010; Laplante-Lévesque, Hickson, & Worrall, 2010; Meyer & Hickson, 2012). Also, more investigation needs to be done to see how HI is understood in different cultural contexts, and how these may impact hearing help-seeking and rehabilitation (Zhao, et al., 2015). There does not appear to be a consensus on how age affects hearing help-seeking, with some studies saying it has no effect (Saunders G. H., Chisolm, & Wallhagen, 2012; Meyer, Hickson, Lovelock, Lampert, & Khan, 2014; Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010) and other saying that it does (Carson, 2005; Preminger & Laplante-Lévesque, 2013).

1.5. Deprivation

The previous section investigated many personal and some interpersonal factors that affect hearing help-seeking. There are also external factors that can affect the utilisation of health care services. There are inequalities and disparities that exist based on the socioeconomic position at an individual and neighbourhood level (Benova, Grundy, & Ploubidis, 2014; Nieman, Marrone, Szanton, Thorpe Jr., & Lin, 2016; Boss, Niparko, Gaskin, & Levinson, 2011; Drukkera, Kaplana, Feronc, & Van Os, 2003). In other words, people who have less financial and social resources receive a lower level of health care. This section will

seek to define deprivation, and investigate the effects of deprivation in health-related and hearing studies.

1.5.1. Definition

Deprivation is sometimes equated to poverty. However, a definition of absolute poverty can be thought of as someone whose income does not provide enough resources to allow the minimum standard for physical survival (Stronks, van de Mheen, & Mackenbach, 1998; Saunders, Wong, & Wong, 2014). In the industrialised world, there is a very small percentage of people that fit this description of poverty (Stronks, van de Mheen, & Mackenbach, 1998). Therefore, in these contexts it is more common to use the term deprivation. Although deprivation and poverty are related, they are not the same. Both have a place in helping to recognise the most vulnerable people in society (Saunders, Wong, & Wong, 2014).

Traditional models of deprivation mainly focused on income, education, race and occupation (Eibner & Evans, 2005; Grundy & Holt, 2001), but these do not capture the entirety of what is observed through the literature and is viewed as too simplistic (Grundy & Holt, 2001). There has been an observed mismatch between income and deprivation measures, and there is only a 50% agreement between the lowest income bracket and the lowest deprivation bracket (Gunasekara & Carter, 2012). This supports the claim that the traditional models of deprivation do not fully capture deprivation.

In this study deprivation will be defined as "a state of observable and demonstrable disadvantage relative to the local community or the wider society or nation to which an individual, family or group belongs" (Salmond & Crampton, 2012, p. S7). This is supported by other descriptions of deprivation that highlight the relative lack of possessions that meet a minimum standard, a lack of health, or not being able to take part in the normal life and

activities of their community (Grundy & Holt, 2001; Stronks, van de Mheen, & Mackenbach, 1998; Saunders, Wong, & Wong, 2014; Eibner & Evans, 2005).

1.5.2. Deprivation and Health Related Research

Worldwide deprivation literature in health is wide and growing. This section will examine some of the health-related literature, with a focus on hearing-related research.

In 1996, the United States spent about $4,000 on health care per capita. However, despite this the United States only ranked 19th and 24th in women's and men's life expectancy, respectively (Eibner & Evans, 2005). This suggests that money and health do not necessarily go hand-in-hand, at least in developed countries. One reason for this could possibly be a concept called relative deprivation, which says that people perceive themselves as deprived when their peers become more economically secure than themselves. Studies have linked relative deprivation to income equality. As income equality increases, the gap between the rich and poor widens, increasing overall deprivation in society (Eibner & Evans, 2005; Subramanyam, Kawachi, Berkman, & Subramanian, 2009). If an individual is in a situation of high relative deprivation, this increases the probability of death and poorer self-reported health. This includes having a higher risk of disabilities, high blood pressure, smoking and being overweight (Eibner & Evans, 2005).

There is an assumption that income affects health, but this is not often researched. In the Netherlands, a study found that income and deprivation were independently-related to perceived health. Researchers found that people in the lowest income group were three times more likely to report poorer health than people in the highest income group. This partly reflects the health effects of relative deprivation (Stronks, van de Mheen, & Mackenbach, 1998). The effect on community health has also been investigated. A study of a small town in the Netherlands showed, in general, people living in neighbourhoods of lower socioeconomic position had less social cohesion and trust in other people in the neighbourhood, including

children. Socioeconomic position and social cohesion were slightly associated with a child's general health and QoL (Drukkera, Kaplana, Feronc, & Van Os, 2003).

Measuring deprivation is often difficult. A common way to measure it is by area-based measures. This was found to be a sensitive way to measure the disparities particularly in oral health, although the exact link between deprivation and oral health has not been fully-established (Locker, 2000). This result would help future studies in oral health to control for socioeconomic position and could help in future strategic planning. However, more research is needed to see what social and physical factors positively and negatively affect oral health (Locker, 2000).

Area-based deprivation measures do not work well in all situations. A study examining a rural region in the UK found that area-based measures are more suited for urban areas than rural areas. In cities, there are large areas of similar housing, in towns people of similar socioeconomic position often live in the same areas, but this is not the case in rural areas. In rural areas, the very wealthy and very poor live side by side. So, while deprivation scores will give helpful insight to urban areas, the scores of rural areas average out. This underestimates the need and ultimately the allocated resources of rural areas (Haynes & Gale, 2000).

Perhaps another neglected group of people are older adults. This could be because it is hard to measure this population. Grundy and Holt (2001) found that of seven variables: (social class, educational attainment, income quartile, household resources lacked, Townsend deprivation indicator, housing tenure and car access (Grundy & Holt, 2001, p. 899)), pairing social class or education with deprivation indicator was the best criteria for determining deprivation in this population of adults ranging from 55 to 74 years of age.

Internationally, there is growing research showing an association between deprivation and hearing loss. In the United States a range of studies have investigated different

populations and deprivation. One review found that regardless of the study design or how the researchers defined HI, children and adolescents from low-income households had a higher incidence of HI (Mehra, Eavey, & Keamy, 2009). A second review found mixed conclusions regarding the link between socioeconomic status and hearing loss, but most of the studies reported a significant association between the two variables (Vasconcellos, Colello, Kyle, & Shin, 2014).

Using a nationally-representative sample of children in the United States, 2.6% had HI and 0.43% were found to have significant HI. The families of children with HI were more likely to live in single-mother households, report poorer health, have Medicaid (government insurance for families whose income is insufficient for private health care) and live closer to the poverty line. These families also used medical services less frequently. More research into the relationship between socioeconomic position and childhood hearing loss is also required (Boss, Niparko, Gaskin, & Levinson, 2011).

In adults aged 45 years and older, it was found that individuals with HI were three times more likely to have a lower level of education than individuals with normal hearing. After correcting for race, education, sex and age, people with HI were 1.58 times more likely to come from low income families and almost twice as likely to be unemployed (or underemployed) than individuals with normal hearing (Emmett & Francis, 2014).

A study on adults aged 70 years and older found that ethnicity, education, insurance status and poverty-income-ratio were associated with hearing health care inequalities. People who were African American and individuals with higher levels of education were more likely to have had a recent hearing check (Nieman, Marrone, Szanton, Thorpe Jr., & Lin, 2016). This was a surprising result to Nieman and colleagues (2016), and they had no basis for this observation, but there are a few possible explanations. One possibility is related to Medicare and the increased access it provides for different medical services. As Medicare is available to

almost all older Americans, perhaps more, older African Americans take up the increased access to services provided by Medicare. Due to the increased access to hearing services provided by Medicare, perhaps many individuals also delay using hearing services until they are eligible for Medicare. Another possible reason for higher rates of recent hearing tests among older African Americans is through work-place hearing checks or community-based medical clinics in underserved communities. A third possible reason is that older African Americans may experience less stigma and are more open to using hearing services than older Caucasian Americans, although the stigma of HI has not yet been fully explored (Nieman, Marrone, Szanton, Thorpe Jr., & Lin, 2016). Although in this study older African American adults were twice as likely to have had a recent hearing test, they were less likely to use HAs compared to Caucasian older adults (Nieman, Marrone, Szanton, Thorpe Jr., & Lin, 2016).

Kubba and colleagues (2004) found that there was an association between deprivation and congenital hearing loss in the newborn population in Glasgow. This association was linked to greater levels of premature births and low birth weights, which increased the incidence of hearing loss due to postnatal infections and illnesses. The UNHSP had some challenges being implemented due to funding in developing countries like Brazil. Cavalcanti and Guerra (2012) investigated what factors led to loss of follow up at the second or later stage. There was an increased risk of not following up an appointment if the mother was on a low income, did not have many prenatal visits, or had little education about the programme. There was also increased risk of not following up for mothers who have given birth to more than one child. The prevalence of HI found among school-aged children living in poverty in Peru was found to be about 7% (Czechowicz, et al., 2010). This was four-to-seven times more likely than children living in countries with higher income. The risk factors for HI include: neonatal jaundice, seizures, hospitalisations and recurrent otitis media (Czechowicz, et al., 2010).

Studies conducted in the UK, Brazil, Norway, Canada, Sweden and Australia have found that there was greater risk of HI for individuals that were of low socioeconomic position (Dawes, et al., 2014; Benova, Grundy, & Ploubidis, 2014; Feder, David, Ramage-Morin, McNamee, & Beauregard, 2015; Béria, et al., 2007), from an ethnic minority background (Dawes, et al., 2014), having fewer years of formal education (Béria, et al., 2007; Helvik & Krokstad, 2009) and self-reported hearing difficulty (Benova, Grundy, & Ploubidis, 2014). Although, the reasons for the increased risk was not always known, it does highlight a health inequality (Dawes, et al., 2014).

1.5.3. The New Zealand Context

In New Zealand, deprivation is monitored by the New Zealand Deprivation Index (NZDep) which is based on New Zealand census data, where the most recent version is NZDep2013 (previous versions were 2006, 2001, 1996, 1991). NZDep2013 reflects eight dimensions of deprivation, which are the lack of: income, employment, communication, transport, support, qualifications, owned home and living space (Atkinson & Salmond, 2014, p. 19). This information is used to determine the relative deprivation of a small geographical area (called a meshblock) that is compared to the rest of New Zealand. Each meshblock contains at least 100 people and is expressed as an index (or decile) from the least deprived (1) to the most deprived (10). It should also be noted that the decile cut-off points are not equally spaced due to a skewed distribution to reflect a "continuum from the 'least deprived' to 'most deprived', rather than from 'affluence' to 'deprivation'" (Atkinson & Salmond, 2014, p. 27) For example, the difference between decile 2 and 5 is not large, but the difference between decile 7 and 10 is large, as shown in Figure 1.

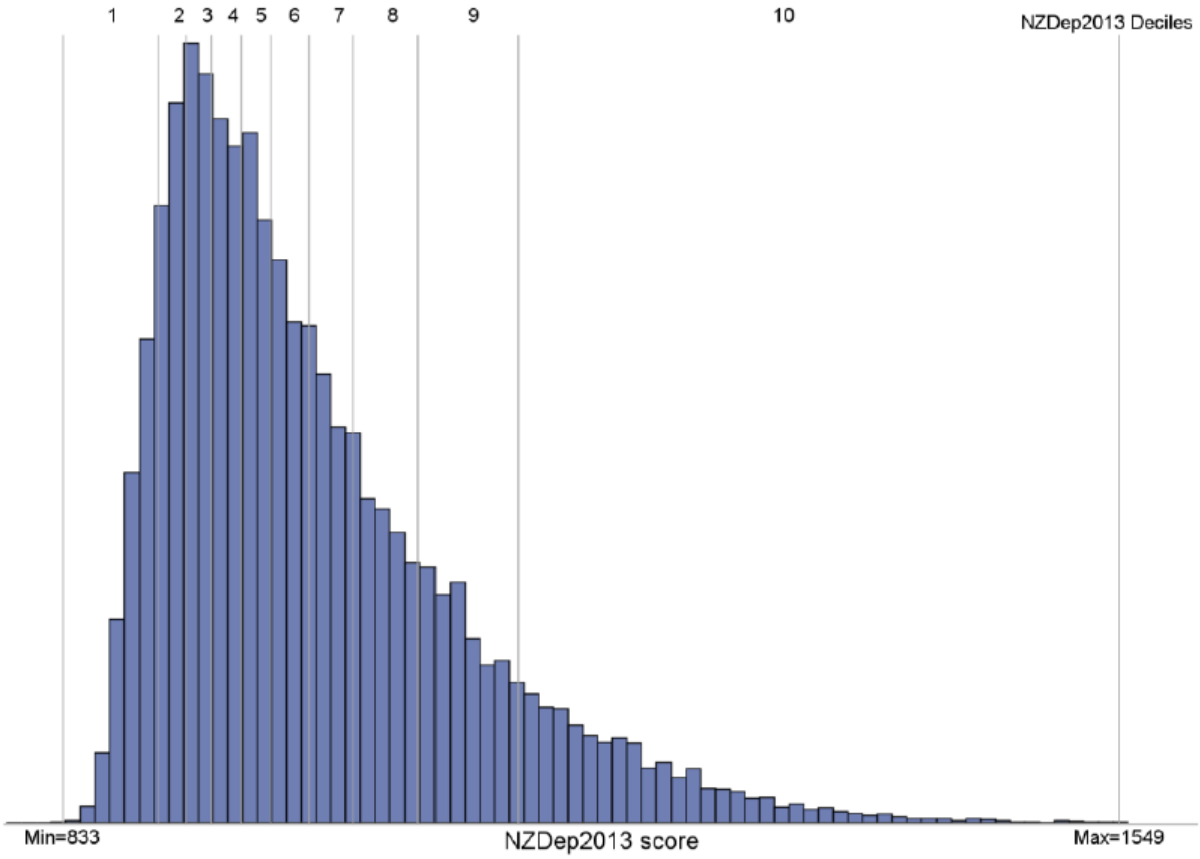

Figure 1: New Zealand Deprivation Index 2013: Decile Distribution.

Note: A histogram showing the distribution of NZDep2013 scores with the decile cut-off points shown by the vertical lines and the distribution from low deprivation (1) to high deprivation (10) (Atkinson & Salmond, 2014, p. 28).
NZDep2013 = New Zealand Deprivation Index 2013.

However, just because an individual may live in a meshblock that has a decile of 10, does not necessarily mean that the individual exists in relative deprivation. To address this, a tool was created to determine individual deprivation, which can be used as a tool for research in social, economic or health-related studies (Salmond, Crampton, King, & Waldegrave, 2006).

The New Zealand Index of Socioeconomic Deprivation for Individuals (NZiDep) was developed as tool with the same theoretical basis that has been used to determine the NZDep (Salmond, Crampton, King, & Waldegrave, 2006). This tool measures the socioeconomic position of individuals by asking eight yes/no questions related to what resources are available

to them. The number of "yes" answers in the questionnaire indicates which of the five deprivation categories presented, an individual would fall in. The categories range from NZiDep value of 1 (low deprivation or high socioeconomic position) if an individual has zero "yes" answers on the questionnaire, to 5 (high deprivation or low socioeconomic position) if an individual has five or more "yes" answers on the questionnaire. Tobacco smoking information was collected during the study and was used to validate the categories, as this has been related to socioeconomic position in New Zealand (Salmond, Crampton, King, & Waldegrave, 2006). The percentage of individuals who smoked tobacco increased with a greater NZiDep value from 20.9% to 67%, for NZiDep values of 1 to 5, respectively. Other tools that measure socioeconomic position are often based on income, occupation or education, but the NZiDep measures socioeconomic position by measuring how an individual consumes their resources, which is more in line with today's social and economic environment (Salmond, Crampton, King, & Waldegrave, 2006).

This survey is specific to the New Zealand context and has been created and validated from representative data obtained from 975 people, consisting of almost equal numbers of Māori, Pacific and non-Māori, non-Pacific adults (predominately New Zealand European). This tool has a Cronbach alpha value of 0.816 showing the tool has good internal consistency. Although there is slight variation in the alpha values between ethnic groups, the Pacific and non-Māori, non-Pacific groups had similar alpha values (0.763 and 0.767, respectively), which were both lower compared to the Māori group (0.877).

Another area based deprivation measure has been investigated in New Zealand called the Index of Multiple Area-Level Deprivation (IMALD), which is based on the Scottish Indices of Multiple Deprivation. What is helpful about the IMALD is that it uses information that is routinely collected from administrative data so it can be updated not just after a census, but as regularly as these data are collected. This could give a more up-to-date picture of

deprivation, rather than a shift every 5 years. The seven domains of the IMALD are: employment, income, crime, housing, health, education and geographical access (Exeter, Zhao, Browne, & Lee, 2016, p. 92). The analysis of the IMALD is broadly correlated to the NZDep2006 findings. However, the downside is that some of the domains of the Scottish Indices do not directly translate to the New Zealand context (Exeter, Zhao, Browne, & Lee, 2016). The hope of the IMALD along with the NZDep, is to get a better understanding of deprivation in the New Zealand context and to improve social and health inequalities. Another study looked further into environmental and social deprivation, and determined investigating environmental characteristics was a helpful way of finding harmful and beneficial mechanisms that contribute to the unequal distribution of health resources. The study found that most environmentally deprived areas in New Zealand had higher incidences of social deprivation compared to the least environmentally deprived areas (Pearce, Richardson, Mitchell, & Shortt, 2011).

Using the 2001 and 2006 versions of the NZDep, Morrison and Nissen (2010) investigated the mobility of people as they moved from one place to another. They found that people who lived in relatively deprived areas were more likely to move into similar or more deprived areas. People who were more likely to move to more deprived areas were younger people (just starting their career) or older people (ending their career). The ethnicity of people moving into more deprived areas were more likely to be Māori or Pacific Island compared to European or Asian, who were more likely to move out of the more deprived areas.

In general, geographical disparities occur nationwide, with people from lower socioeconomic positions more likely to have worse health related behaviours. Yet, sometimes deprived places have surprisingly good health, and can be considered resilient. Pearson, Pearce and Kingham (2013) investigated resilience along with physical and social characteristics. They found the most resilient places were more likely to be densely-populated,

urban areas. If physical factors (e.g., safe drinking water, air quality and environmental deprivation), along with unhealthy living infrastructure (e.g., alcohol and gambling outlets) could be controlled, these could provide large improvements to highly deprived areas. This study raised the need for greater understanding of community cohesion and interactions between people and their neighbourhoods (Pearson, Pearce, & Kingham, 2013).

Potentially related to Pearson, Pearce and Kingham's study is a study on the ethnic density effect, which says people from ethnic minorities are healthier when they live with people of their own ethnic group in large concentrations. These studies have been conducted in the United States and the United Kingdom, but may not necessarily translate to ethnic minorities in other countries, or indigenous people in their homelands. Bécares and colleagues (2013) wanted to see if the ethnic density effect was observable in indigenous populations because their connection to the land, the way they settle and their motivation for residing in particular locations would differ from non-indigenous populations in the same area. For Māori, the indigenous people of New Zealand, there are historical, cultural and political connections to land and their resources. It was found that ethnic density helps to protect health and minimises racial discrimination of Māori, but this is hidden by the connection between areas of high Māori density and high deprivation. This study highlights that area deprivation has an overpowering effect on ethnic density (Bécares, Cormack, & Harris, 2013).

Childhood deprivation has also been investigated. Gunasekara and Carter (2012) looked at persistent childhood deprivation over 7 years, measuring it with questionnaires including the NZiDep. It was found that 73% of children lived in homes without deprivation. However, one-third of children in single-parent households experienced persistent deprivation. Also 22% of Māori and Pacific Island children and 20% of children between the ages of 0 and 4 years experienced persistent deprivation (Gunasekara & Carter, 2012).

Denny and colleagues (2016) investigated socioeconomic deprivation among a nationally-representative sample of high school students to see if there was an association between household deprivation, neighbourhood deprivation and student health. The student's household deprivation and health were measured by surveys administered by research staff. The NZDep2013 was used as a measure of neighbourhood deprivation. Three categories of student housing were identified: no household deprivation (that represented about 80% of student households), housing deprivation (that represented15% of student households) and material deprivation (that represented 5% of student households) (Denny, et al., 2016). A student was said to be living in 'housing deprivation' if there was overcrowding (more than two people per bedroom) and other rooms in the house (e.g., garage or living room) were being used as bedrooms. A student was living in 'material deprivation' if they scored high levels of deprivation in all categories of the survey, including overcrowding rooms, using other rooms as bedrooms, lack of access to household goods (e.g., car, telephone and a computer) and parents that worry about not having enough money for food. Students living in either 'housing deprivation' or 'material deprivation' were more likely to report depressive symptoms, regular cigarette smoking and be overweight (Denny, et al., 2016). Cigarette smoking was found to be two-to-three times higher in households experiencing deprivation compared to students not experiencing deprivation. This agrees with a study that concluded there is an association between neighbourhood deprivation and adolescents being overweight and obese (Utter, et al., 2010).

The relationship between deprivation and utilisation of a GP was investigated. People from the most deprived areas consulted their GP 30% more than those from the least deprived areas. This effect was reversed when looking at people who consulted the nurse at a general practice. People from the most deprived areas visited the nurse 29% less than those from the least deprived areas. After adjusting for deprivation, it was found that the Māori, Pacific

Island and Asian ethnic groups visited the GP about the same or a bit less than people with European background (McLeod, et al., 2006). The exception to this was for consultations for children younger than 6 years of age, who at the time of the study were entitled to greater subsidies. This suggests that cost was a potential barrier to GP consultations for other age groups (McLeod, et al., 2006).

Haynes, Pearce and Barnett (2008) investigated how ethnicity, deprivation and access to health services affected survival from a variety of cancers from 1994-2004. People living in the most deprived areas were at the greatest risk of not surviving from melanoma or lung cancer. The risk of passing away from melanoma increased to 60% for people living in the most deprived category (according to NZDep, the year was not stated, but the researcher estimates it is NZDep2001 (Haynes, Pearce, & Barnett, 2008)). The high death rate related to melanoma for people living in low socioeconomic areas, despite an overall lower risk, suggests that there is a later stage of diagnosis and treatment. When the stage of cancer presentation was controlled for, deprivation was found to be a risk factor that seemed to affect the rate of survival for some cancers, but not others. This adds to the body of evidence that the survival rates after cancer are not evenly spread, even in countries with well-developed cancer services (Haynes, Pearce, & Barnett, 2008).

There appears to be an association between deprivation and life expectancy. Tobias and Cheung (2003) observed that through the mid-to-late 1990s there was a trend that increasing deprivation was related to decreasing life expectancy. At birth, males and females born in the most deprived areas were expected to live 9 and 7 years less, respectively, compared to people born in the least deprived areas. At each deprivation level, the life expectancy of Europeans was higher than those of Māori and Pacific Island ethnicity (Tobias & Cheung, 2003). Although ethnicity and deprivation are recorded as independent variables

in many studies, they are most likely linked in some way and not possible to untangle them (Haynes, Pearce, & Barnett, 2008).

There is a large amount of research in New Zealand looking at deprivation and health. However, unlike international research, there is no information regarding an association between HI and deprivation in New Zealand. What is known is approximately 191,000 people between the ages of 15 to 64 years are living with HI in 2013 (Statistics New Zealand-Tatauranga Aotearoa, 2014). HI was defined as adults who "cannot hear, or have difficulty hearing, what is said in a conversation with one other person and/or what is said in a group conversation with three or more people, even when using an assistive hearing device such as a hearing aid" (Statistics New Zealand-Tatauranga Aotearoa, 2014, p. 14). In another study, Exeter and colleagues (2015) estimated in 2013 there were 334,685 people in New Zealand (aged 14 and older) with some form of HI. This was 45,000 less people than what Statistics New Zealand estimated for people aged 15 and over (Exeter, Wu, Lee, & Searchfield, 2015). This difference in estimates was likely due to different sampling frames and definitions of HI (Exeter, Wu, Lee, & Searchfield, 2015).

1.6. Health Belief Model

This thesis investigated the help-seeking behaviours of participants from low socioeconomic positions who experience HI. To research the participants' attitudes and behaviours, a theoretical model is required to help explain them. In this section the Health Belief Model (HBM) will be defined, and investigate how the HBM has been used in health-related and hearing studies.

1.6.1. Definition

The HBM is a framework to help explain the link between the subjective states of an individual and their current health behaviours. This includes two underlying values influenced by the social psychology theory: (1) the individual's "state of readiness" (Rosenstock, 1966, p.

98) to carry out a particular action and, (2) how effective or beneficial a particular action is believed to reduce a threat (health condition). These two variables define if an individual is in a state where he or she is ready to act (Rosenstock, 1966). These two variables are expressed in the HBM as six constructs: (1) perceived susceptibility, (2) perceived severity, (3) perceived benefits, (4) perceived barriers, (5) perceived self-efficacy and (6) cues to action. These constructs are defined in Table 1. The relationship between the constructs is shown in Figure 2.

Table 1: The Health Belief Model: Constructs and Definitions.

HBM Construct	**Definition**
Perceived susceptibility	How vulnerable an individual believes that he or she is to a particular condition to the extent of contracting it.
Perceived severity	An individual's beliefs about the seriousness of the consequences (e.g. medically, emotionally, economically or otherwise) after acquiring a particular condition.
Perceived benefits	How beneficial an individual believes an alternative action or intervention will be for a particular health condition.
Perceived costs	What an individual believes are the negative aspects of an alternative action or intervention for a particular health condition.
Cues to action	Triggers that help an individual take action for a particular health condition. These triggers could be internal (e.g. personal perception of their body) or external (e.g. discussion with others, media, knowing someone else who has gone through the process, or otherwise).
Perceived self-efficacy	The personal belief that he or she can carry out an action to produce the desired outcome.

Note: Definitions from Rosenstock (1966; 1974), and Rosenstock, Strecher and Becker (1988).

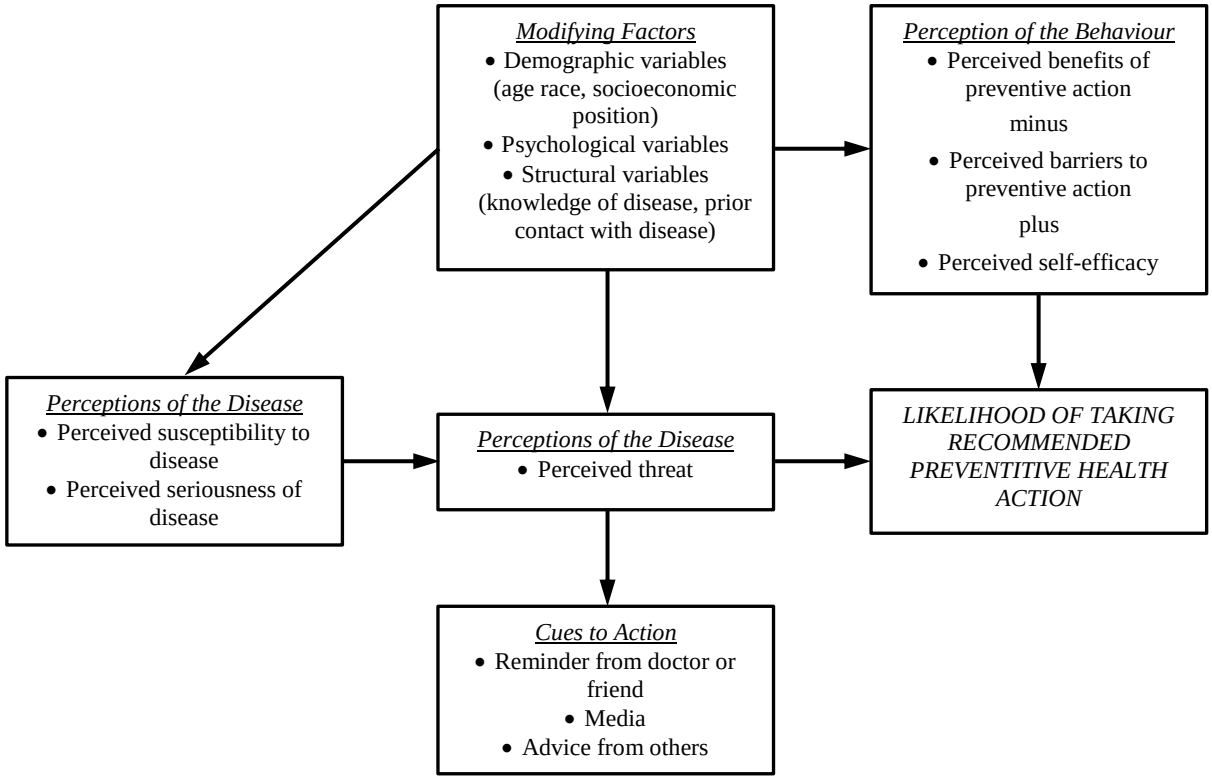

Figure 2: The Health Belief Model

Note: Adapted from Rosenstock (1974, p. 344).

1.6.2. Health Belief Model in Health Related Research

The framework of the HBM arose from a study by Dr. Hochbaum with the US Public Health Service in the 1950s that looked at the behaviours of the US population regarding screening and testing of tuberculosis (Lorig, 2000). The HBM was introduced in 1966 by Rosenstock in response to research problems raised by Dr. Hochbaum and other research (Rosenstock, 1974). Due to the large number of people not engaging in screening programmes for diseases or illnesses, there was a large amount of research investigating preventative health behaviours (Tanner-Smith & Brown, 2010). Preventative health behaviour is defined as "any activity undertaken by a person who believes himself to be healthy for the purpose of preventing disease or detecting disease in an asymptomatic stage." (Kasl & Cobb, 1966, p. 246). It is in this context that the HBM was formed with the goal of understanding and predicting behaviour of individuals before they are persuaded to change their health behaviours (Rosenstock, 1966).

The original HBM consisted of five constructs: perceived susceptibility, perceived severity, perceived benefits, perceived costs and cues to action. This was not intended to be a comprehensive description of all health behaviour, but a model to help identify some of the key variables that significantly contribute to preventative health behaviours (Rosenstock, 1966).

However, the HBM has also been extended from preventative behaviours to illness behaviour and sick-role behaviour (Kirscht, 1974; Becker & Maiman, 1975; Becker, et al., 1977). Illness behaviour is defined as "any activity undertaken by a person who feels ill, for the purpose of defining the state of his health and of discovering suitable remedy" (Kasl & Cobb, 1966, p. 246). Sick-role behaviour is defined as "the activity undertaken by those who consider themselves ill for the purpose of getting well" (Kasl & Cobb, 1966, p. 246).

In the study by Becker and Maiman (1975), the HBM was modified to include motivation towards health, which is the push factor towards reducing susceptibility. This includes the desire to comply with doctors' instructions and focusing on positive aspects of health (Becker & Maiman, 1975), other modifications include adding a "locus of control" or "perceived health status" as noted by Jette and colleagues (1981, p. 82). Rosenstock himself added the perceived self-efficacy construct later after considering how preventative health care had changed to include chronic illnesses; where patients would need to consider modifying lifelong routines which required more thought than going in for an immunisation injection or screening test (Rosenstock, Strecher, & Becker, 1988).

The HBM is perhaps one of the most well-known and influential social psychological frameworks (Janz & Becker, 1984; Harrison, Mullen, & Green, 1992; Tanner-Smith & Brown, 2010) and has been used to study a large variety of health conditions. HBM studies range from preventative studies to sick-role studies covering a variety of topics such as investigating influenza vaccination, screening behaviours for diseases (e.g., tuberculosis, Tay-Sachs disease,

and many different cancers), risk factor behaviours (e.g., nutrition, exercise, smoking, physician visits, drink driving), and how to increase the compliance of medical regimes for hypertension, diabetes, renal disease, obesity and others (Janz & Becker, 1984; Harrison, Mullen, & Green, 1992; Carpenter, 2010; Tanner-Smith & Brown, 2010; Jones, Smith, & Llewellyn, 2014).

Many reviews have looked at the validity of the HBM in predicting preventive health behaviours (Rosenstock, 1974; Janz & Becker, 1984; Harrison, Mullen, & Green, 1992; Carpenter, 2010; Tanner-Smith & Brown, 2010), illness behaviour (Kirscht, 1974) and sick-role behaviours (Becker, 1974; Becker & Maiman, 1975; Jones, Smith, & Llewellyn, 2014). There were common observations from the reviews. Many studies that used the HBM as a framework did not contain all the constructs of the HBM (Harrison, Mullen, & Green, 1992; Tanner-Smith & Brown, 2010; Jones, Smith, & Llewellyn, 2014), with the "cues to action" construct the least likely to be included (Janz & Becker, 1984; Jones, Smith, & Llewellyn, 2014) and considered the most underdeveloped construct (Rosenstock, 1974; Carpenter, 2010). Some reviews did not include "cues to action" in their review because there were so few studies included the construct (Harrison, Mullen, & Green, 1992; Carpenter, 2010).

Many studies using the HBM were retrospective (28 out of 46 (Janz & Becker, 1984) and 10 out of 16 (Harrison, Mullen, & Green, 1992)). This had the potential problem of affecting the measurement of the HBM constructs, because it is quite difficult to see how attitudes change after an action was taken.

There was a lack of consistency between studies. For example the HBM constructs were defined differently, the instruments or surveys used to measure the HBM constructs were different and the number of items on the response scales were different (Rosenstock, 1974; Janz & Becker, 1984; Harrison, Mullen, & Green, 1992; Carpenter, 2010; Tanner-Smith & Brown, 2010; Jones, Smith, & Llewellyn, 2014). This lack of consistency created

doubt over how the constructs were being measured, therefore comparisons between studies may not be valid and may even appear to have contradictory conclusions (Tanner-Smith & Brown, 2010). For example, Janz and Becker (1984) concluded that the four main HBM constructs (perceived susceptibility, perceived severity, perceived barriers and perceived benefits) were all significantly-related to health-related behaviours, while Carpenter (2010) found only benefits and barriers predicted behaviour. In contrast, Jones, Smith and Llewellyn (2014) found that none of the constructs were predictive of behaviour. A way to overcome this limitation would be to develop a standardised method of measuring HBM constructs for different fields (Rosenstock, 1974; Janz & Becker, 1984; Harrison, Mullen, & Green, 1992; Carpenter, 2010; Tanner-Smith & Brown, 2010; Jones, Smith, & Llewellyn, 2014), but this is not in widespread use (Tanner-Smith & Brown, 2010). Due to these inconsistencies Carpenter (2010) and Jones, Smith and Llewellyn (2014) concluded that the basic four constructs of the HBM should no longer be used.

What these reviews may be showing is that processes and methods of studies have improved, but the theory has not. This is something that Rosenstock and Kirscht (1974) did not want to happen. Their desire was for the HBM to continue to change as they reflected on the first 20 years of the HBM "old measures of concepts are replaced by new measures; omissions in the model are being filled in; new interpretations of old concept are appearing; experimental efforts to change health beliefs and behaviour are increasing exponentially. And there is no reason to believe that these evolutionary trends will diminish" (Rosenstock & Kirscht, 1974, p. 471). Their desire was improvements in methodology would also bring improvements in the theory. Although there are a few cases of the HBM being expanded, it appears that the model has not been improved.

The number of studies in meta-analysis reviews were small, ranging from 16 studies (Harrison, Mullen, & Green, 1992) to 33 (Janz & Becker, 1984). This was partly due to the

studies for not providing enough information so effect sizes could not be calculated (Carpenter, 2010; Tanner-Smith & Brown, 2010), or effectively analyse the methodology and interventions used in a study (Jones, Smith, & Llewellyn, 2014).

Despite the many criticisms of the HBM, it still has intuitive and "practical importance in the study of health behaviours" (Harrison, Mullen, & Green, 1992) and "provides important pieces of the disease prevention puzzle" (Tanner-Smith & Brown, 2010).

1.6.3. Health Belief Model in Hearing Related Research

Some of the earliest hearing-related research that used the HBM was in the 1990s, looking into the application of health material and prevent noise-induced hearing loss by Dr Sally Lusk and her colleagues. The National Institute for Occupational Safety and Health also looked into interventions that would positively influence workers to adopt healthy behaviours by changing their attitudes and beliefs (Stephenson & Stephenson, 2015).

In 1996, van den Brink and colleagues used the HBM to explain the results from questionnaires they used to study help-seeking behaviours, participant attitudes towards HI and HAs in adults aged 57 years and older. They found out of every four adults with HI, one had not discussed their HI with their doctor and one had talked to their doctor, but had not been through a HA trial. Of this population 40% had a HA and 6% of people had used a HA previously, but not now. People who did not consult their doctor about their hearing loss had attitudes of low perceived severity, often passively accepted the hearing-related issues as part of aging, and saw little benefits from HAs. People who consulted their doctor about their hearing problems, but did not go on to get HAs felt stigma was a large barrier. Examples of stigma were, being reluctant to admit HI, or relating HAs to old age or decreased mental ability. Those who did take steps to address their HI not only had high-perceived severity, but also experienced strong pressure from significant others to do something about their HI (van der Brink, Wit, Kempen, & van Heuvelen, 1996)

The HBM has been used as a framework to see which constructs are most related to positive hearing heath behaviours (Flamme, Myers-Verhage, Larsen, & Mandrick, 2008). This was assessed by seeing how the beliefs around hearing loss prevention of grade seven students changed over time. Two different rural populations in the United States were either given no intervention (i.e., the control group), a basic intervention or a comprehensive intervention. The interventions were given when the students were in seventh grade. After 12 months, a 47-item self-report questionnaire was completed by the students to see what their beliefs were (relating to the HBM constructs). Another sheet of questions was administered to see what intent students had on wearing hearing protection in different situations where hearing protection would be appropriate. It was not clear from the study if these questionnaires were also administered at the start to give baseline results. This would also have been helpful to see if there were any changes in the students' attitudes over time and what difference the interventions had on these initial beliefs.

The study found that students who received the comprehensive intervention had significantly-higher: perceived susceptibility, perceived benefits, perceived convenience barriers (i.e., students were less likely to use convenience as an excuse for not using hearing protection), cues to action and intent to protect hearing – than the control group. About three-and-a-half years after the initial intervention, a smaller subset of the students completed the questionnaire and indicated intention to use hearing protection questions again. Flamme and colleagues found that students who had been given the comprehensive intervention had more favourable beliefs regarding cues to action, self-efficacy, susceptibility, benefits and intent to protect hearing, compared to students with only basic intervention. The HBM constructs that had the largest differences were cues to action and perceived self-efficacy. The students also perceived that HI would have more severe effects. This was a positive result for preventive hearing conservation programmes with adolescents. A result from this study showed that

students given the basic intervention, had a slightly-negative result for perceived self-efficacy after 12 months. It possibly indicates that rushed or limited hearing education programmes could reduce the possibility of positive hearing protective behaviours, due to rushing through a complex message or ideas (Flamme, Myers-Verhage, Larsen, & Mandrick, 2008).

Gilliver and Hickson (2011) developed a brief questionnaire that used the HBM constructs to investigate what GPs thought about hearing rehabilitation in older adults. They found that GPs were aware how susceptible older adults were to HI, and understood the severity, including its impact on their relationships. The GPs perceived costs of HAs, including financial, stigma associated with HAs and concern about the ability of older adults to use HAs, were large barriers for referring older adults for rehabilitation. This was compounded by low-perceived benefits, that many GPs thought that hearing rehabilitation did not benefit all older adults with HI and that they only needed to wear HAs for particular activities. Gilliver and Hickson believe that educational materials may help patients and GPs have more open discussions, but also to help GPs better gauge the patient's beliefs about hearing rehabilitation. There is also opportunity for these materials to correct any misinformed ideas about hearing rehabilitation.

Gilliver and colleagues (2015) used the HBM in combination with the Stages of Change (SoC) model to study the factors that influence young people to reduce noise exposure in their activities. The SoC describes changes in behaviour as a series of stages: pre-contemplation (resistant to taking further action), contemplation (thinking about changing behaviour), preparation, action (behaviour change happens), and maintenance. Through a questionnaire that they developed they paired certain behaviours with different stages of the model. Using the information gained from the questionnaire about the participants' beliefs strategies, this could then be implemented to help motivate them towards healthier behaviours. Gilliver and colleagues found that about 60% of young people surveyed were either in the

"pre-contemplation" or "contemplation" stage and therefore, not engaging in noise reduction behaviours. The hope of this study was that new materials could be developed by using the information relating to the different stages of the SoC for more appropriate and effective hearing health materials for this population and the community overall.

Another questionnaire that was developed and based on the HBM sought to assess knowledge, attitudes, and behaviours (KAB) relating to hearing preservation (Saunders G. H., Dann, Griest, & Frederick, 2014). The KAB was developed as an outcome measure to be used pre- and post-intervention in a randomised control trial to study two hearing conservation interventions: one being a computerised hearing loss prevention program and the other a printed pamphlet. The questionnaire had 48 questions (16 measure knowledge, 22 measure attitudes and 10 measure behaviours). Principle component analysis and reliability analysis showed six factors amongst the attitude items that were understood to be measuring six constructs (the original four constructs plus perceived self-efficacy and cues to action) of the HBM (Saunders G. H., Dann, Griest, & Frederick, 2014).

In 2013, the hearing beliefs questionnaire (HBQ) was developed to understand hearing health behaviours and beliefs relating to help-seeking, HA use and acquisition within the framework of the HBM (Saunders G. H., Frederick, Silverman, & Papesh, 2013). Saunders and colleagues decided to base the questionnaire on the HBM because it was a commonly-used framework in health education and they believed it would help provide a holistic insight into hearing health beliefs (Saunders G. H., Frederick, Silverman, & Papesh, 2013). The HBQ started as a 60-item questionnaire which was reduced to 26 items after being tested and analysed, with each construct of the HBM represented in the HBQ by three to eight statements. Participants responded to each statement on an 11-point scale, ranging from 0 (completely disagree) to 10 (completely agree) with 5 meaning the participant had no opinion on the statement (Saunders G. H., Frederick, Silverman, & Papesh, 2013, p. 560).

Statistical analysis of the HBQ through principal component analysis, factor loading and a scree plot showed that five of the six constructs assessed, should be retained. The Cronbach's alpha values for five of the HBM constructs ranged from 0.605 to 0.774. Although, a factor with a value of 0.8 or higher is considered to have high internal consistency, social science studies tend to have low-to-medium internal consistencies ranging from 0.4 to 0.7 (Costello & Osborne, 2005). However, the perceived self-efficacy construct had a poor internal consistency of 0.234 indicating that the items of this tool (associated with the self-efficacy construct) did not relate well to each other. The authors reported that the scale was "unsatisfactory in its current form" (Saunders G. H., Frederick, Silverman, & Papesh, 2013, p. 564). Further analysis revealed that only 36% of the total variance could be explained by the five constructs (excluding perceived self-efficacy) of the HBQ. Saunders and colleagues hoped to further develop the HBQ (Saunders G. H., Frederick, Silverman, & Papesh, 2013) into a more robust questionnaire. Despite these limitations with the HBQ, it was still able to differentiate between participants with different hearing health behaviours. More specifically, that help-seekers had higher perceived susceptibility, higher scores on cues to action, and lower perceived barriers compared to non-help-seekers (Saunders G. H., Frederick, Silverman, & Papesh, 2013).

Other studies have used the HBQ. One study explored enhancing the HBM by adding an extra construct considering the perceived burden of hearing loss on CPs (Schulz, et al., 2016). The other was a two-part study using the HBQ in combination with the SoC to see if the two could be used together to characterise people seeking help (for hearing loss) for the first time (Saunders G. H., Frederick, Silverman, Nielsen, & Laplante-Lévesque, 2016a; Saunders G. H., Frederick, Silverman, Nielsen, & Laplante-Lévesque, 2016b).

The study by Schulz, et al. (2016) examined influences an individual with HI to seek clinical assessment, with a focus on perceived burden of HI on CPs. Participants voluntarily

completed many surveys including the HHIE-S (Hearing Handicap Inventory for the Elderly – screening version), the HBQ and a SOS-HEAR (Significant Other Scale for Hearing Disability). These questionnaires were used to measure participation restriction, hearing healthcare and the effects of HI on a significant other, respectively. The study showed that individuals who perceived a hearing loss to have a larger burden on their CPs, were more likely to have sought hearing assessment. Therefore, engaging CPs when possible may help encourage at least a hearing assessment, and ideally some form of rehabilitation. If these issues are addressed earlier, the hope is that there will be less consequences later due to untreated hearing loss (Schulz, et al., 2016). They also found that adding the extra construct (perceived burden on CPs measured using the SOS-HEAR) to the HBQ improved the predictive fit of the HBM.

To try and understand the hearing behaviours of adults that are seeking hearing services for the first time Saunders and colleagues used the HHIE (non-screening version) or HHIA (Hearing Handicap Inventory for Adults), the Psychosocial Impact of Hearing Loss, the URICA (University of Rhode Island Change Assessment) to measure the SoC stages, and the HBQ. The SoC stages are: pre-contemplation, contemplation and action. These surveys were administered at baseline and after 6 months. At baseline the study found that the benefits, severity, self-efficacy and cues to action constructs helped in explaining the variance on one or more URICA scores. This explained 5% of the variance for adults in the contemplation and action stage, and 15.5% of variance for those who were at the pre-contemplation stage (Saunders G. H., Frederick, Silverman, Nielsen, & Laplante-Lévesque, 2016a). The 6-month follow up showed 80% of adults in the action stage of the SoC (at baseline) had acquired HAs, compared to 15% of those in the pre-contemplation stage (note that many of these participants were veterans in a country where HAs can be obtained through Veterans' Affairs). Adults who had acquired HAs had significantly-higher perceived severity, benefits and cues to action

than those who did not have HAs, and according to the HBM, they were more likely to have a change in behaviour. This was determined by comparing the baseline and 6-month SoC and HBQ scores, and seeing how they changed for people who did or did not acquire HAs. It was concluded that the SoC gives insight into how likely an individual is to seek intervention, and the HBQ gives insight into how attitudes or behaviours change over time.

1.7. Quantitative and Qualitative Research

The previous sections have investigated the literature concerning HI, hearing help-seeking, deprivation and using the HBM as a framework to investigate the themes. There are two methodologies that the research could be conducted in, quantitative or qualitative research. This section will look briefly at the complex distinction between the two methodologies, the general goals of the two research methods and which method would be more appropriate for this thesis.

1.7.1. Quantitative and Qualitative Research Continuum

Research in the social sciences can serve many purposes. The most common purposes are exploration, description and explanation (Babbie, 2013). In a similar way Blaikie (2003) said social science research was about answering three questions: the what, how and why of social phenomena. The two main methodologies of researching these questions are through quantitative and qualitative research. Almost all researchers would be aware of quantitative versus qualitative research, although not everyone would have the same understanding of the distinction between them (Blaikie, 2003). There is a continuum of understandings of how the two research methodologies differ, some think that it is fundamentally important, while others think it is no longer useful to distinguish them (Bryman, 2016). Some other views in between these two range from seeing the only difference as simply the type of data used, i.e., quantitative research uses numerical data and qualitative research uses non-numerical data (Babbie, 2013). Others understand that the two methodologies are not against one another, but

have important differences in the relationship between ideas and variables (Daly, 2003). While another view is to understand the methodologies as two different cultures; each to be understood within their own traditions and practices, suitable for answering different research tasks and designed to reach different research goals (Goertz & Mahoney, 2012). The researcher holds a view on the continuum that is similar to Goertz and Mahoney – understanding that quantitative and qualitative research as different methodologies that have different worldviews, practices, strengths, weaknesses and goals to answer different aspects of social science research.

Exploring the continuum of quantitative and qualitative research is beyond the scope of this thesis. It is important to be aware of this continuum of understandings before overviewing the different goals of the two methodologies, as aspects of these different views will be seen in the goals of each methodology.

1.7.2. Goals of Quantitative Research

The nature of quantitative research is deductive (Bryman, 2016; Daly, 2003), which means a person using this methodology will draw from theoretical ideas and known knowledge about a particular social phenomenon (Bryman, 2016). A hypothesis is deduced from the knowledge, then translated into a form that can be researched. This requires the key ideas of the research question and hypothesis to be translated into variables (Blaikie, 2003; Knudsen, et al., 2012). This is where quantitative research becomes known for its numerical data (Babbie, 2013; Daly, 2003) which can often make observation of social phenomena clearer (Babbie, 2013).

The variables become the basis of analysis and in their numerical form allow something to be measured (Babbie, 2013), making it easier to analyse statistically (Daly, 2003; Babbie, 2013), and can make it easier to compare and summarise (Babbie, 2013). Good results of a quantitative study will be valid and reliable (Knudsen, et al., 2012; David &

Sutton, 2004). Results are valid when the study measured what the researchers set out to measure (rather than measuring another phenomena) (Knudsen, et al., 2012). The results are reliable when they do not change significantly over time (Knudsen, et al., 2012; Bryman, 2016) or with a different population that is like the studied population (Knudsen, et al., 2012).

If the results are valid and reliable this allows quantitative research to reach its ideal goal, to generalise the findings from the sample to the general population (Knudsen, et al., 2012; Blaikie, 2003; Daly, 2003), showing that the relationships identified in a study are applicable to general social life (Daly, 2003). The ultimate goal, would be to have the fewest number of variables to be able to explain the largest amount of social phenomenon (Daly, 2003).

1.7.3. Goals of Qualitative Research

If quantitative research is about generalising and average effects (Knudsen, et al., 2012; Blaikie, 2003; Daly, 2003; Goertz & Mahoney, 2012), then qualitative research is about trying to understand and describe how attitudes, beliefs and behaviours produce an outcome in a specific case (Knudsen, et al., 2012; Goertz & Mahoney, 2012). This is an inductive approach to research, using observations and findings to create a theory that prompted the research (Bryman, 2016; Knudsen, et al., 2012; Daly, 2003).

The emphasis is on using words rather than numbers (Bryman, 2016). Often the findings that help to build meaning and depth of understanding come from how individuals understand the world they live in (Bryman, 2016; Daly, 2003; Yin, 2016; David & Sutton, 2004), which can be richer than quantified data (Babbie, 2013). Good qualitative research should be trustworthy (Knudsen, et al., 2012; Marshall & Rossman, 2006; Yin, 2016). This requires qualitative research to be credible, transferable and dependable (Knudsen, et al., 2012; Marshall & Rossman, 2006). Research is credible when the researchers of a study select methods that are consistent with their study aims and use multiple data sources in the analysis

(Knudsen, et al., 2012; Marshall & Rossman, 2006; Yin, 2016). Research is transferable if there is a thorough account of the context so someone reading about the study can see if the conclusions reached by the researchers are distinctive or applicable to other social phenomena (Knudsen, et al., 2012; Marshall & Rossman, 2006). Research is dependable if the handling and interpretation of data is transparent and the process of the study is well-documented (Knudsen, et al., 2012; Marshall & Rossman, 2006).

The aim of qualitative research is to build depth and meaning. This is done by observing and analysing the combination of attributes, aspects and conditions to see how they relate with one another (Daly, 2003; Yin, 2016) with the goal of creating new perspectives or theories about a social phenomenon (Knudsen, et al., 2012).

1.7.4. Types of Qualitative Research

There are many different types of qualitative research methods that can be found in many different sources (Yin, 2016; Babbie, 2013; Miller & Brewer, 2003; Bryman, 2016; David & Sutton, 2004). However, this section will outline four methods that have been used in audiology research (Knudsen, et al., 2012). These methods are: grounded theory, phenomenological analysis, conversational analysis, and qualitative content analysis.

Grounded theory was developed as a response to sociology research that would propose grand design theories which did not relate to the real world (Gibson, 2003). Grounded theory is a bottom-up approach to research that builds substantial theories of social phenomena based on careful observation of the social phenomena (Gibson, 2003; Yin, 2016; Hennink, Hutter, & Bailey, 2011). This method of research moves back and forth between induction and deduction to allow the researcher to be both scientific through observation and creative in seeing the relationship between the observations (David & Sutton, 2004; Babbie, 2013). The steps in grounded theory are well-defined, yet the process is quite flexible, depending on the data (Hennink, Hutter, & Bailey, 2011). This means that data collection,

data analysis through coding and categorisation, interpretation and tentative theory generation, are processes that can be repeated, overlap or even done at the same time (Hennink, Hutter, & Bailey, 2011; Knudsen, et al., 2012). This allows a tentative theory to be tested against new data that are collected, that can reinforce a tentative theory or forces the researcher to step back, and re-examine the data to generate another tentative theory. This process is sometimes called constant comparison (David & Sutton, 2004; Hennink, Hutter, & Bailey, 2011). This process of constant comparison continues ideally until saturation is reached, where a tentative theory can reasonably describe or explain the situation being researched (David & Sutton, 2004).

Phenomenology was formed as part of a critique against the view that all knowledge is based on what people experience through their senses (Brewer, 2003). This brought back validity to researchers wanting to understand the social world from an ordinary person's point of view (Brewer, 2003), allowing participants to describe and analyse the world and everyday life as they see it (Knudsen, et al., 2012; Babbie, 2013; Yin, 2016). The study of phenomenology has two main parts. The first part of phenomenology involves understanding how the participants make sense of their world from their perspective and experiences to develop a worldview (Bryman, 2016; Marshall & Rossman, 2006). To do this well, in the second part of phenomenology, the researcher must bracket off any preconceived ideas, judgments or assumptions that they may have about the participants' situation or circumstance (Brewer, 2003; Marshall & Rossman, 2006; Bryman, 2016; Yin, 2016).

Conversation analysis is concerned with the study of naturally-occurring conversations to understand the structures and thinking that underlie them (Acton, 2003; Bryman, 2016; Silverman, 2010). This is different to standard field work as conversation analysis does not rely on the participants' or researchers' observations (Acton, 2003). Audio and video recording technology allows the researchers to analyse a conversation in its original form

(Acton, 2003), provide very detailed and accurate transcripts (including pauses, bad grammar and sounds e.g., “um” and “ah” (Bryman, 2016; Babbie, 2013)) and is available for other researchers to directly access if they wish to inspect it (Acton, 2003; Silverman, 2010). The main purpose of analysing naturally-occurring conversations in such detail is to understand how participants converse with one another (Babbie, 2013). The analysis is mainly descriptive in nature, to explain how participants use language, and achieve order through conversation (Knudsen, et al., 2012; Bryman, 2016). Conversation analysis should not be confused with discourse analysis, which is more concerned with the content of the talk rather than the structure (Brewer, 2003) and is more flexible in what data it uses and how they are analysed (Bryman, 2016).

Content analysis is possibly the most prominent method used when qualitatively analysing documents (Bryman, 2016). It has been described as inductive analysis (Babbie, 2013) because it is primarily based on observations of the data. The analysis however can have varying degrees of depth, it can just describe the data; answering the what question. The analysis can also go further to find patterns, relationships and themes within the data; answering the how and why questions (Babbie, 2013; Bryman, 2016; Knudsen, et al., 2012). The data are in the form of text (which can include transcribed audio sources, e.g., interviews). More recently this has included a wide range of communications (especially regarding popular culture (Brewer, 2003)). The data are then broken down into units (or codes), then groups of units can be categorised (David & Sutton, 2004). As more data are analysed, categories can be re-organised or built up. This method includes constantly discovering, and comparing the units of data. This is a method that is systematic, but not rigid; that moves back and forth between data collection, coding and categorisation.

One can see that this method draws on elements from grounded theory, especially the in areas of sampling, coding and constant comparison (Bryman, 2016). This-code based

analysis becomes the basis for displaying the data in matrices or network diagrams (David & Sutton, 2004). A matrix is a table of rows and columns that contains data. Depending on what the variables are, the matrix may contain quotes (from interviews), numbers, keywords, symbols, and so forth. A network diagram focuses on displaying sequences and relationships. This may show a set of events, a process, or the connection between major occasions, where the diagrams are not necessarily time dependent (David & Sutton, 2004). These forms of displaying data are to achieve the main goal of content analysis, which is to describe, represent, and uncover the underlying meaning and themes of the analysed material within its context (Bryman, 2016; Knudsen, et al., 2012; Brewer, 2003).

In this section, four methods of qualitative analysis that have been used in audiology have been described. In this thesis, the researcher has used the content analysis method to collect, analyse and display the data (using matrices) in order to see what themes were within the data.

1.8. Study Aims

The aim of this project was to investigate if there are barriers to help-seeking for hearing services for men from a specific socioeconomic position in Christchurch, New Zealand. If there are barriers to help-seeking, identify those barriers and see if the information gained from the study and literature can inform possible next steps.

2. Methods

2.1. Overview

There were two aims of this thesis. The first aim was to see if men of a specific socioeconomic status, who had not yet sought hearing services for a known hearing loss had barriers to seeking hearing services. The second aim was to identify any barriers, if they existed. Both aims were addressed through a semi-structured interview based on the HBQ. The researcher collated and analysed the data to see if there were barriers to help-seeking for this population and to see if there were beliefs and attitudes that contributed to these barriers. This chapter outlines the methodology used in this research project.

2.2. Ethics Approval

This project was approved by the University of Canterbury Human Ethics Committee on Friday 13th May 2016 (Ref: HEC 2016/25). The ethics approval letter can be found in Appendix A.

2.3. Participants

The target group the researcher chose for this research project were working men of low socioeconomic position who had a hearing loss, but had not yet sought services for their hearing loss.

2.3.1. Inclusion Criteria

To be included in this study, potential participants had to meet the following criteria:

- self-identify as male,
- be working, as defined below,
- be aged between 18-64 years,
- be of low socioeconomic position, as defined below

- have a hearing loss, as defined below,
- have not sought services for a hearing loss, and
- could participate in an interview conducted in English.

Men were chosen as the target group because men have been shown to be less likely to seek help compared to women (Levinson & Ifrah, 2010; Li, et al., 2014). To keep the group as homogeneous as possible for the study, the researcher chose to interview men who were working. Working was defined as having been employed (either full time or part time) within the last 12 months. The researcher selected the age range of 18-64 years, as this reflects the typical working age in New Zealand (Salmond & Crampton, 2012) and was commensurate with the NZDep2013 (Atkinson & Salmond, 2014). The researcher defined low socioeconomic position as scoring a NZiDep value of 4 or 5 (Salmond, Crampton, King, & Waldegrave, 2006). The researcher defined hearing loss as those participants indicating difficulty in three or more situations as per the Communication Performance section (Demorest, Wark, & Erdman, 2011, p. 101) of the Screening Test for Hearing Problems (STHP) (Demorest, Wark, & Erdman, 2011). The researcher also verified hearing loss: presence, type, degree and configuration with a hearing check.

The researcher decided to work with men who had not yet sought services for a hearing loss because if audiology-related barriers did exist for this population, those would likely be the barriers they were currently facing. This was preferred over a population who had already overcome those barriers and were considering those aspects retrospectively.

2.3.2. Recruitment

For this study the researcher started recruitment on Monday 30th May 2016 with the aim to continue recruiting until saturation (defined below) was reached or until the time constraints inherent in Master's thesis research prevented further data collection.

For the first round of recruitment the researcher used the New Zealand Atlas of Deprivation (Ministry of Health-Manatū Hauora, 2015) to identify which meshblocks located within the Canterbury District Health Board having a scale of deprivation value of 7 or higher. After identifying which meshblocks were within a 30 minute drive of the University of Canterbury, the researcher drove around to 33 different medical centres located in those meshblocks, gained approval, and put up advertisements on their noticeboards or gave one to the office staff to obtain management authorisation. The researcher also put up advertisements in some work places, dairys (small, local convenience stores) and pubs falling in the identified meshblocks. Information on the advertisement included an overview of the study, the inclusion criteria, what was required of participants and the associated inducements (Appendix B).

Approximately one month after the first round of recruitment, a second round of recruitment was undertaken to increase the number of participants in the study in an attempt to reach saturation (the point in time when two sequential interviews did not yield new thematic information). Putting less emphasis on the previously defined meshblocks, the researcher displayed advertisements in over one-hundred different places all around the city of Christchurch. This included: libraries, community centres, workplace noticeboards, churches, malls, social services departments, supermarkets, petrol stations, hospitals, hearing services (hearing therapist services and the Canterbury Hearing Association), social clubs, various medical centres and via social media. A closing date was featured on the advertisements to try and encourage potential participants to express interest promptly.

After the promising results of the second round of recruitment, the recruitment phase was extended by another month for a final round to try and reach saturation. Where it was possible, the researcher replaced the advertisements that were displayed for recruitment round two, and found approximately 20 new locations for the advertisements. During this time the

researcher also discovered that some people who had displayed research advertisements for him had forwarded the advertisement to other professional contacts, likely to facilitate the recruitment process.

Due to time constraints, the researcher decided to stop recruiting on Friday 12th August 2016 and finished interviews on Friday 30th September. The researcher was also able to reach saturation at this time. In total, 15 participants were recruited over 10 weeks, with 12 participants completing their involvement in the study. Of the three participants that did not complete the study, one participant withdrew due to health reasons and the other two participants did not complete the study before the cut-off dates.

2.4. Procedure

Figure 3 outlines the overall procedure from the recruitment phases until the end of the participants' involvement in the study.

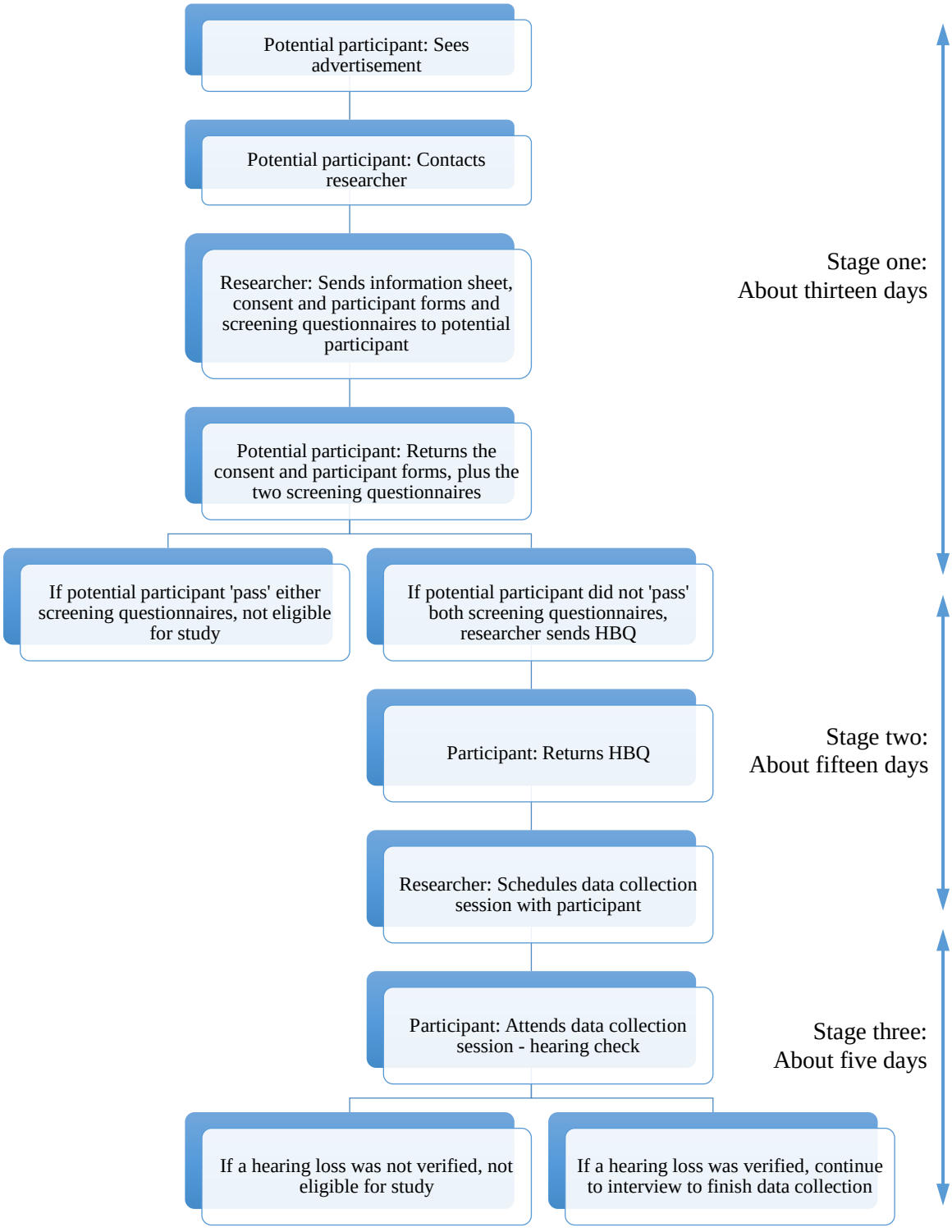

Figure 3: Participant Recruitment Procedure.

Note 1: The process showing the participants involvement from the start to the end of the study. The arrows on the right side of the figure indicate the three stages of the study and an approximate time that elapsed at each stage.
Note 2: To 'pass' the screening questionnaires meant that the potential participant either had sufficient resources not to be considered highly deprived or could communicate in different situations likely indicating no hearing impairment.
HBQ = Hearing Beliefs Questionnaire.

The procedure involved three main stages. For stage one, men who were interested in the study contacted the researcher via phone or email. The researcher sent out a packet consisting of: (1) an information sheet (Appendix C), (2) a consent form (Appendix D), (3) a participant information sheet (Appendix E), (4) the NZiDep (Appendix F) and (5) the STHP (Appendix G). After the potential participants read the information sheet, they returned the completed consent and participant information forms along with the two completed surveys, to the researcher. Potential participants who passed either of the two screening questionnaires were not eligible for the study. Passing the STHP indicated the potential participant's communication was sufficient and not likely to have HI. Passing the NZiDep meant the potential participant had sufficient resources not to be considered highly deprived. Potential participants that did not pass both questionnaires could progress to stage two.

For stage two, the researcher sent out the HBQ (Appendix H) to the participant. Once the participant completed and returned the HBQ to the researcher, a time was arranged for the participant to come to the university for stage three.

For stage three, a hearing check was performed to behaviourally and objectively verify any suspected HI based on the results of the STHP. If no hearing loss was evident, the participant was not eligible to continue involvement in the study and would not proceed to an interview. If a hearing loss was verified, the participant could advance to the final part of the study. The researcher conducted a semi-structured interview with the participant to ask him about his hearing beliefs and attitudes. A set of scripted questions were prepared and asked to every participant in the same order. However, not all the statements of the HBQ and other unscripted questions were discussed with every participant. All interviews were recorded using an Olympus WS-650S digital voice recorder.

2.5. Measures

2.5.1. Questionnaires Used

Three questionnaires were used for this project. The NZiDep and the STHP (see section 2.5.2) were used as screening questionnaires in stage one, to ensure that the potential participants met the study criteria. The third questionnaire was the HBQ, which was the basis of the semi-structured interview with participants. Participants would complete the HBQ in stage two, but were asked to clarify their responses in stage three.

2.5.2. Screening Test for Hearing Problems

For the study, the researcher required participants who had HI. The researcher used a self-assessment screening tool to highlight hearing loss likelihood and to avoid the need to conduct pure-tone audiometry for every potential participant interested in the study.

The STHP is a self-report questionnaire that contains a total of 20 items that assesses the communication performance (Demorest, Wark, & Erdman, 2011, p. 101) (9 items) and the adjustment (Demorest, Wark, & Erdman, 2011, p. 101) (11 items) of an individual. There is good internal consistency evident, with the questionnaire having coefficient alpha values of 0.842 and 0.770 for the communication performance and adjustment scales, respectively.

One of the aims of the STHP is to identify people who require further assessment of their communication problems (Demorest, Wark, & Erdman, 2011). Although there is only a moderate correlation between audiometric and self-perceived impairment, one of the trends that can be drawn from this literature is that communication and adjustment problems are related to the degree of HI (Demorest, Wark, & Erdman, 2011). For the purposes the study, the communication section of STHP was a good tool that could be used to quickly screen for communication issues. If a participant identified communication issues in many of the situations detailed via the questionnaire, the researcher could assume some form of audiologic impairment was likely and required further investigation.

2.5.3. Hearing Check

The researcher performed a hearing check that consisted of bilateral air conduction audiometry. Bilateral bone conduction audiometry was performed if an air conduction threshold was ≥ 15 dB HL (decibel hearing level) for octaves between 0.5 and 4 kHz (kilohertz). Participation in the study was granted for any participant with one or more elevated air conduction thresholds over 15 dB HL.

Before each hearing check otoscopy was performed using a Welch Allyn® otoscope. If there was no significant occlusion of the ear canals, E-A-RTONE™ 3A insert earphones were used for air conduction audiometry, otherwise Telephonics Corporation TDH-50P headphones were used. Bilateral air conduction thresholds were obtained using the modified Hughson-Westlake procedure according to the University of Canterbury clinical protocols (University of Canterbury, 2005), via a Grason-Stadler GSI-61 audiometer. Air conduction thresholds were obtained at all octaves across the frequency range of 0.25 to 8 kHz, which also included interoctave frequencies of 1.5, 3 and 6 kHz for all participants. In the cases where bone conduction audiometry was required, a RadioEar© B71 bone conduction transducer was used. All equipment was calibrated by ECS Ltd. All participants had their pure tone audiometry completed inside a WhisperRoom™ SE 2000 series sound isolated enclosure, which meet the ANSI S3.1-1999 (reaffirmed 2008) the standard for test rooms appropriate for hearing tests (Acoustical Society of America, 1999).

2.5.4. Semi-structured Interview

The researcher conducted semi-structured interviews because it is an effective method of answering “why” questions rather than “how many” or “how much” questions (Fylan, 2005, p. 66). At a practical level, the researcher was initially inexperienced at interviewing for research purposes. A semi-structured interview provided the researcher with a structure to follow with set or prepared questions to ask, which covered the six constructs of the HBM.

However, it also provided the researcher with the flexibility to ask more probing questions, depending on how participants responded to the set questions.

The interview was piloted on two separate occasions; once with a colleague known to the researcher and once with a volunteer participant, who was a hearing health professional. The researcher received feedback on interview manner, style and content.

Each interview started with an introduction about the researcher, his background, interests and how the study came about. This was followed by a prompted, short introduction by the participant, and a review of the hearing check results. The researcher then provided an overview detailing how the rest of the interview would proceed, explaining there were no "right" or "wrong" answers. The preliminary introductions, results review and procedural review provided all participants with an opportunity to ask questions and have them answered, prior to the interview phase.

Interview questions were aimed at gaining a better understanding of what the participant was thinking as he responded to the various statements on the HBQ. The formal part of the interview then took place. The researcher used the HBQ as a framework for the interview along with some scripted, prepared questions. Follow-up questions were asked when necessary, to seek further clarification or better understand the participant's point-of-view. The formal part of the interview finished by asking if the participant had any questions or comments not covered by the researcher during the interview, up-to that point. The final part of the interview was used to complete administrative tasks including the provision of advertised study inducements, which consisted of a $30 Westfield Mall voucher and a $10 Motor Trade Association voucher.

2.6. Data Analysis

The process of analysing the data was based on the qualitative content analysis outlined in Yin (2016) and consisted of four levels of evaluation.

2.6.1. Evaluation 1

First, the researcher transcribed the interviews verbatim and collated and organised the transcripts in a systematic way. The researcher then became familiar with the transcripts by reading and re-reading them, to ensure comprehension of the interview content and gain a better understanding regarding the participants' general beliefs towards hearing.

2.6.2. Evaluation 2

Second, the researcher broke down the data into meaning units. Each meaning unit was a statement that expressed an individual belief or attitude about hearing by an individual participant. After all the data were broken down into meaning units, the researcher then assigned each meaning unit a label and allocated it to a sub-category. As the researcher elected to frame this project on the HBM, the organisation of the questionnaire facilitated the creation of six distinct labels for the data. These were: (1) perceived susceptibility, (2) perceived severity, (3) perceived benefits, (4) perceived barriers, (5) perceived self-efficacy and (6) cues to action. Similarly, the HBQ contained statements that related to each construct of the HBM. This enabled sub-categories to be formed from each statement of the HBQ, and the scripted, prepared questions.

2.6.3. Evaluation 3

Third, the researcher created narrative arrays for the data; one array for each label. Each narrative array had a different number of columns depending on the number of sub-categories (i.e., the number of statements in the HBQ relating a particular HBM construct, plus the other scripted questions). The researcher then filled each column with rows of direct participant quotes relating to each sub-category.

2.6.4. Evaluation 4

Fourth, the researcher went through each column (sub-category) and highlighted words or phrases that were repeated, which became key words. Subsequently, segments with similar key words were grouped together to identify any themes present in the data. Finally, narrative arrays were consequently organised into thematic arrays, to highlight any themes arising from the data, aligned with the different constructs of the HBM. This procedure allowed the researcher to formulate potential conclusions about the findings.

3. Results

3.1. Overview

This chapter first presents general participant characteristics and then presents the findings from the interviews the researcher conducted with the participants. The methodology provided thematic arrays via the HBQ statements and scripted questions used in the interviews, which subsequently facilitated response categories relating to each of the HBM constructs. The themes that arose from the data were placed within each category. The number in parentheses next to the statement indicate how many participants discussed that statement or question. The number in parentheses next to each theme indicate the number of participants that contributed to that theme. Note that participants may have contributed to more than one theme within each category but not every participant contributed to every category. Table 2 shows an example of a thematic array.

Table 2: Example of a Thematic Array

HBQ: Statement A (8)	Scripted Question (12)	HBQ: Statement B (12)
Theme A-1 (6)	Theme Q-1 (10)	Theme B-1 (8)
Theme A-2 (6)		Theme B-2 (3)

Note 1: This example thematic array has three sub-categories (statement A and B from the HBQ and a scripted question). Statement A and B sub-categories have two themes each, while only one theme could be drawn from the data from the scripted question sub-category.
Note 2: The number in the parentheses indicate the number of participants who were answered a statement, question or contributed to a theme. Notice not everyone answered Statement A and that only three people contributed to Theme B-2.
HBQ = Hearing Beliefs Questionnaire.

The thematic arrays were used by the researcher to answer the questions, 1) “Are there barriers to seeking hearing services for the research population?”, 2) “If there are barriers, can we identify those barriers?”, 3) “Are there are any underlying beliefs or attitudes that contribute to the reported barriers?”.

3.2. Participant Demographics

In this study, 12 participants completed all three stages of the process. This section identifies some general information about the participants which is displayed on Table 3.

The ages of the participants range from 36 to 62 years. Seven of the participants identified themselves as New Zealand European and one participant identified himself as Māori. In terms of annual income, six participants earned $25,000 or less, and one participant earned between $75,000 and $100,000. Three participants had completed a university bachelor's degree and four participants had not completed high school education.

Although it was not an explicit question on the survey or in the interview, through interactions with the researcher it became clear what the participant's current employment status was. Table 3 shows the current employment status of participants, but all participants were employed within the last 12 months. Two participants were currently not working due to health reasons, three participants were unemployed or underemployed and seven participants were employed in a full time or part time capacity.

The STHP questionnaire contains 9 different listening situations and the participants indicated if they had difficulty communicating in that situation. Difficulty in 3 different listening situations was required as part of the study criteria. Half of the participants indicated that they struggled to communicate in 8 or 9 out of 9 different listening situations.

Table 3: Participant Demographics

Participant Number	Age (years)	Ethnicity	Average Annual Income ('000)	Highest Level of Education	Current Employment Status	NZiDep Score	STHP Score
15	36	NZE	$25-$50	Bachelor's	Employed	5	6
16	60	NZE	$25-$50	Bachelor's	Employed	4	9
18	38	NZE	$75-$100	Bachelor's	Employed	4	9
20	42	NZE + M	$50-$75	Certificate	Employed	4	7
25	46	NZE	$25-$50	School Certificate	Employed	5	6
33	51	NZE + M	≤ $25	Certificate	Unemployed	5	7
38	48	NZE + M	≤ $25	N/A	Unemployed	5	8
39	59	NZE	≤ $25	School Certificate	Underemployed	4	4
43	55	NZE	≤ $25	None	Sickness	5	8
44	52	M	≤ $25	School Certificate	Sickness	5	9
47	51	NZE + M	$25-$50	Certificate	Employed	4	5
50	62	NZE	≤ $25	High School	Employed	5	9

Note 1: Ethnicity: "NZE" = New Zealand European, "M" = Māori and "NZE + M" = Participant identified himself as New Zealand European and Māori.
Note 2: Average annual income is measured in New Zealand Dollars and displayed in thousands of dollars.
Note 3: Highest education level: "Bachelor's" = completed a university bachelor's degree, "Certificate" = completed a certificate, diploma or polytechnic qualification, "High School" = completed high school education, "School Certificate" = completed a high school qualification, but not sufficient for university entrance and "N/A" = not applicable.
Note 4: Employment status: "Employed" = part time or full time employment, "Underemployed" = not having enough paid word, "Unemployed" = not having any paid work, and "Sickness" = on a sickness benefit and not able to work.
Note 5: NZiDep = New Zealand Index of Socioeconomic Deprivation for Individuals.
Note 6: STHP = Screening Test for Hearing Problems.

3.3. Analysis of the Data

3.3.1. Perceived Susceptibility

Table 4 shows the themes the researcher found in the data relating to perceived susceptibility, or how vulnerable the participants thought they were to HI. Between statements one and two on the HBQ, 10 of the 12 participants explicitly mentioned that their hearing had

or will deteriorate in the future generally because of age or noise. Participant 47 stated "The older you get the, the more likelihood it is … your hearing is going to deteriorate."

Responses that indicated potential advertising influences were associated with statement four on the HBQ. Out of the nine participants that discussed this statement, six participants said they had heard about regular hearing checks through advertising. Participant 44 reported, "Yeah, I've just seen it advertised saying that you should. It might have even been on the radio or something." Participant 39 said something similar, "I would say advertising by the audio district probably… That's probably what it is… I imagine, their promotions have probably said something along that line…".

Table 4: Thematic Array relating to the Health Belief Model Perceived Susceptibility Construct.

1. My hearing will likely get worse in the future. (12)	**2. It is possible that I will lose my hearing. (12)**	**3. I am not likely to lose my hearing because hearing loss doesn't run in my family. (10)**	**4. I've heard you should get your hearing tested now and then. (9)**
My hearing has or will deteriorate over time. (8)	It is possible that I will lose hearing, but I am unsure to what degree. (5)	I do not think hearing is related to family history. (6)	I have heard from advertising that you should get it checked now and again. (6)
Noise (industrial, environmental or technological) has an effect on hearing. (8)	My hearing will continue to deteriorate. (4)	I am unsure if hearing loss runs in the family. (2)	I have health checks for other things (e.g. eyes), why not hearing? (4)
Hearing is affected by age. (7)	I am unsure if I will lose my hearing. (4)	There may be a family link to hearing loss. (2)	I have generally heard that I should get regular hearing checks. (3)
			I thought about getting my hearing checked because of personal experiences. (3)

Note: These are themes the researcher drew from the data relating to perceived susceptibility of hearing impairment. The number in the parentheses indicates the number of participants that answered that statement, or question, or contributed to that theme.

3.3.2. Perceived Severity

Table 5 shows what participants thought would be the consequences of having a hearing loss in relation to their daily activities, relationships and work situations. Almost all of the participants reported that a hearing loss has, or would, negatively affect relationships with family or friends. Participant 20 stated, "… that's more like interacting more with… family, other family members, socialising going out to parties and that sort of stuff… it would, be very limiting because … it's the social interactions and that and actually even at work, interacting with other colleague, work colleagues or clients and that sort of thing." When talking specifically with family members, participant 20 related that a hearing loss can have an effect, "… because of the frustration and the lack of communication, and you know, that's it. Some people … they've fought…". Most of the participants agreed with the sentiments of participant 20. Participant 16 shared that a hearing loss is, "It's a bit of a handicap, limit, maybe limit the enjoyment. Maybe limit the full participation or as much participation… limit, maybe, the amount of participation or the quality of the participation." Participant 50 reported "If you can't hear them, you can't interact like you normally would. So, in a family situation, I tend to just sit back and, and not say an awful lot."

However, some of the participants thought perceived severity would be situation-dependent. Participant 38 explained that his daily activities not be affected by a hearing loss, stating – "I suppose that will just more come under interaction with people, when hearing and needing to hear what's going on. Whereas at the moment I don't… if I was in a heavy industry or something and needed to hear what was going on around me then, yeah, probably would." Participant 33 had similar thoughts indicating, "I'm not too sure. You hardly see people when you're umm… how do you say it? When you're poor … so you don't have much of a social life. I just go to the library to use the computer."

Participant 25 reported that his daily activities are not affected because, "I've just adapted. I've adapted my social life … So, I don't place myself in those sorts of places (night clubs and places with lots of background noise) … I don't think it impacts. You just adjust, you make allowances." Participant 43's perspective was, "I guess it just depends on your outlook on life, what you're doing … what I meant by that was, well yeah, it depends on the situation. It depends on what sort of person you are."

Table 5: Thematic Array relating to the Health Belief Model Perceived Severity Construct.

5. Having a hearing loss would limit my daily activities. (12)	**6. When people have hearing loss, their relationships with family and friends suffer. (11)**	**7. Having a hearing loss negatively impacts a person's job performance. (12)**
Hearing loss has or would affect what activities I participate in and the quality of that participation. (7)	Hearing loss has or would cause negative effects on relationships. (10)	My interactions with colleagues and clients are or would be negatively affected by a hearing loss because of misunderstandings or having to ask for repeats. (10)
My general communication has or would be affected by a hearing loss. (6)	Social gatherings are or would be hard for me as a hearing loss may cause me to withdraw from interacting with others. (5)	I fear my character is being judged by others because I do not always hear what they said. (3)
My relationships (colleagues, clients and family) has or would affected by a hearing loss. (6)	Other people can feel annoyed at me because of miscommunication caused by a hearing loss. (4)	Having a hearing loss could be a safety issue at work. (2)

Note: These are themes the researcher drew from the data with regards to the perceived severity of hearing impairment. The number in the parentheses indicates the number of participants that answered that statement, question or contributed to that theme.

3.3.3. Perceived Benefits

Table 6 shows the themes relating to the perceived benefits of hearing loss interventions. Nine out of 12 participants agreed that the benefits of HAs outweighed the costs, if one could afford to purchase HAs. Participant 47 indicated, "Well, depends how much

you're going to fork out because with hearing aids they range from 2 grand to 10 grand depending on what you've got to have, but if you can afford them … the benefits are going to outweigh not being able to hear." Six participants shared that they perceived the price of HAs to be extremely high. Other participants reported that they could not afford HAs. Participant 50 stated, "you know the minute you walk in the door… it's out of my price range." Participant 20 expressed similar views "It's so prohibitively expensive to get hearing aids. I've been told they're up to 5 grand each, and that sort of thing, 10 grand. When there's other forms of communication if necessary… I can't afford it."

Participant 25 explained a potential (subjective) conflict associated with statement eight by sharing, "… it's a bit of a hard one because you sort of think to yourself, 'well, why don't you get hearing aids, you know, and just overcome the costs?' You know, but you gotta ask yourself what you're going to give up, there's… other things you've got to give up in order to have those hearing aids, and sacrifices and in my personal circumstances I choose not to do that."

Some participants thought of other costs other than financial, for example, participant 15 explained, "I've always imagined them (hearing aids) to be clunky, and … (unwieldy)… Umm, maybe it's because he (family member) can't afford a proper one." Participant 16 said, "depending on how big and clumsy they are, or small and effective …".

Other than HAs, sign language was identified by four participants as a conceivable intervention for hearing loss. Participant 43 stated, "I'd imagine it would be harder if you were older, to learn sign language… because it's something else you've got to learn."

In the context of a doctor's appointment different strategies were reported with regards to that situation. Some participants (e.g., participant 18) indicated that they did not struggle in physician-related contexts, "I think it's because like in this situation it's a one-on-one and it's quite focused. I don't think you'd have an issue." Other participants (e.g., participant 50)

opted to have a support person attend doctor's appointments as well, indicating, "… but I know for quite a while there, I'd used to have to drag my wife along, just in case I miss something that was important so I can … say to her afterwards … what was said, and try and figure out if it was something I'd missed." Participant 25 stated, "I've told my doctor and my doctor knows anyway, but it's not a big deal." Some participants did not report the application of any strategies while attending physician appointments, deferring instead to written advice, directions or instructional materials provided at the time of the consultation. Participant 20 expressed little concern regarding missing verbal instructions while at a doctor's appointment and shared, "Simply because half the time you don't understand what the doctor's talking about anyway and he actually writes it down on his chit anyway… if I'm worried about it, I just go to the Internet… because with the doctors you can find out from other avenues."

Of the 11 participants that discussed statement 12, most of them agreed that having a hearing loss is, or would, be stressful. Four participants expressed that hearing loss was stressful. Participant 50 found it stressful indicating, "… most of the time I (can) manage (a conversation), but I've got to consciously manage it… to be in a situation where I can no longer manage it because it just won't make any difference… that would be so hard." Four participants shared that hearing loss-related inability to fully understand a conversation would be stressful. Participant 16 explained, "… you think you know what it is … but it turns out later on, that you've actually, sort of, misinformed yourself, or you didn't quite get it right because the difference between 'can' and 'cannot' I mean is pretty clear normally, isn't it? But, if you didn't actually pick up on the 'not' or couldn't … just different words, you know, and it can just change the whole meaning. And that could lead to a stress level because of the outcome, because of what you missed out on or something." The remainder of the participants indicated hearing loss stress associated with being seen as one who frequently asks for "repeats" to facilitate conversational understanding. Participant 44 reported, "… if having

people round and… talking to people or whatever, socializing, and it's like 'yeah… what'd he say?' … it's not really nice being the one that's always going 'what? I didn't hear, can you repeat that?'"

Table 6: Thematic Array relating to the Health Belief Model Perceived Benefits Construct.

8. The benefits of using hearing aids would outweigh the costs. (12)	**Are there other things you think can be done to help people with hearing loss? (11)**	**9. I would worry if I had a hearing loss. (10)**
Hearing aids are worth it if you can afford them. (9)	I'm not sure what you can use other than hearing aids to help people with hearing loss. (6)	I would worry about missing out on what was said or mishearing something. (4)
Hearing aids are really expensive. (6)	Sign language can be used instead of hearing aids. (4)	Not being able to hear music properly makes or would make me worry. (4)
I cannot afford hearing aids. (4)	Some form of auditory training could be used to help with hearing loss. (2)	I would not worry too much, that is just the way it is. (3)
	Removing wax can help people with hearing loss. (2)	

10. I don't go out much so having a hearing loss wouldn't be a big problem for me. (10)	**11. If I had a hearing loss, I would worry about missing important information during visits with my doctor. (12)**	**12. It would be stressful to have a hearing loss. (11)**
I do not go out much, but having a hearing loss is still a problem. (4)	My doctor knows about my hearing loss so they communicate well with me. (3)	Social situations can be stressful because I do or would have to use different skills to keep managing it. (4)
I do not go out much, so having a hearing loss would not make much difference. (4)	The doctor writes things down or uses written materials so I will not miss any important information. (3)	Trying to communicate and not catch the whole conversation is or would be stressful. (4)
Hearing loss affects you wherever you are. (2)	I do or have taken someone with me to the doctor's so I do not miss any important information. (3)	It is or would be stressful to have a hearing loss because I do not want to be always asks for repeats. (3)
	I would worry about missing important information if I had a hearing loss. (3)	

Note: These are themes the researcher drew from the data in relation to perceived benefits of intervention for hearing impairment. The number in the parentheses indicates the number of participants that answered that statement, question or contributed to that theme.

3.3.4. Perceived Barriers

Table ***7*** contains the themes and subjective impressions regarding what the participants indicated were barriers to seeking services or interventions for hearing loss. Cost was identified as a barrier for getting help for HI for 10 out of 12 participants. Five participants specifically stated cost was the only perceived barrier. This supported the theme from Table 6 "Hearing aids are worth it (benefits outweigh the costs) if you can afford them." Participant 38 said "… if I could afford it, I'd be going to get one" and also previously shared that the financial cost was an issue "wholly and solely." Participant 50 shared "It just comes down to money. Yeah, if I won Lotto this weekend, after I got over the excitement and finished drinking the Champaign and stuff, and then yeah… pop down to the, the local hearing clinic (laughs). I'd love to be able to hear properly."

Participant 33 reported similarly "If I had the money… yeah, I'd buy it!" However, the participant's plan for hearing aid provision was potentially exacting, "Save some money for it. Just buy cheap food (laughs). Because whenever I've saved up for something like that I've starved… That's just what you do, you know?" Two participants indicated money would not be an issue. When queried by the researcher about what could conceivably prevent gaining HA access, participant 47 said, "Nothing. I'd find some way to pay for it, I mean you can walk off the street into (a hearing clinic) or any of the other hearing specialists and get an assessment… and then there's ways and means… Go to the doctor, get a referral and start putting some of it towards, under the general medical services benefit … there are ways and means of limiting the costs. Then it's just a case of 'well if I need them, I need them.' You either go into debt, nothing unusual there, or you find a way, cut your costs and transfer money."

Participant 16's perceptions about cost-related features focused on technology. "It's a bit like anything, I guess … probably, the smaller it is, probably the rate at which it improves

your hearing, convenience, look, and so on. You'll probably pay bigger dollars than for something which is a wee bit older technology and doesn't look quite as nice, probably … That would be my thought." Participant 39's impressions about cost-driven features considered cosmetic factors. "That's probably why people spend thousands of dollars on decent hearing aids that are hidden rather than buying these cheap things that everybody can see. What's the difference? It's what other people think. As well as effectiveness I dare say." He later went on to say "… the cheaper ones are ugly, but if money was an issue, the better ones … (you) hardly know it's there … ugliness not need to be a problem … if you had money to spend on it." Participant 18 explained the psychological cost was, "… stigma, and hearing aids … I'd rather just be oblivious to the problem … with the hearing aid … you know, not cool." Participant 20 expressed the costs were both financial and psychological, "… it's money, comfort, looks – in order to prevent people from being … judgmental, or pitiful"

Financial cost was an issue for many participants. As a follow up question to six participants, the researcher asked what they thought were other potential options for funding HAs (as this was not a scripted question; not all participants were asked this question). Participant 33 said, "Just Work and Income" (a government organisation that provides employment and financial assistance to New Zealanders). Two other participants agreed, with participant 50 explaining, "Work and Income help out, but I only believe that it's only about twelve-hundred dollars. Well, you won't get much for twelve-hundred bucks these days." Participant 39 perceived governmental support as a potential HA funding option, "I'd probably try and get government support if it was really bad." Participant 47 responded similarly, "…even government depart… even, even take it to your MP!" Accident Compensation Corporation (a government corporation that financially supports people injured through work or recreation) was also perceived to be a funding option. However, this was not

wholly viewed by all participants as a positive alternative. Participant 25 stated, "They've got some sort of come back and some sort of protection, suppose they're protecting their own arse, I know that." Even KiwiSaver (a savings scheme for retirement with contributions made through workplaces), was considered to be a potential HA funding source. Participant 50 shared, "I mean my thought is, you know, in two-and-a-half years I've got my KiwiSaver coming up… And we've made no firm decisions on what we're going to do with it, and it might be… the opportunity to do something then. But until then there's no chance (of getting hearing aids)."

Statement 17 was intended to index what the participants thought about the effectiveness of HAs. Four participants were unsure about HA effectiveness. Participant 15 explained, "I'm just thinking from a technological aspect as well … I don't really know how they (work), I'm sure they just amplify the volume so to speak. I mean with glasses it's completely obvious, you put them on and your whole world changes. It's such a fundamental piece of equipment for me to have in my life, that it would utterly change it profoundly if I didn't have glasses. I'm not sure where they're at with hearing aids, would (hearing aids) give that kind of benefit as I get from wearing glasses. Like if it would remove the annoyance a bit of going out into society or whether if, it would revolutionize a half deaf person's experience of the world or so. I don't have huge amount of experience of going through life umm… being deaf. So you're getting, I think, some hypothetical answers here." Participant 50 indicated, "I think it's hard to comprehend how that change could be unless you're doing it yourself. Because people are inclined to say 'yeah, yeah, it's made (a) great huge difference.' But you don't really know, I mean people are not going to say 'well, I just spent 8 thousand dollars and it sucks,' are they? They're going to say it's good… I'm a pessimist (laughs)."

Although some participants indicated knowing other people with HAs, they preferred not to enquire about their subjective experiences. Participant 20 explained, "… most people

say that hearing aids don't work well, or I haven't actually approached anyone to ask if it helps them or anything like that. So, I feel that if I do that I'm highlighting the fact that they've got hearing aids. And I'm a person who doesn't want go 'let's ask those people' because I feel that they might get insulted or that I'm being judgy (judgemental)." Participant 18 responded similarly, "I've not really spoken to anyone with hearing aids. … a colleague wears one (hearing aids) … but I wouldn't talk to him about it, or anything like that, I just feel like it's kind of a personal question and I don't want to be prying or anything like that…"

The researcher asked participants what things would need to be overcome before acting on a hearing loss. Ten participants stated that this was dependent upon knowing they could afford the intervention (primarily HAs). Five participants said they would wait until their hearing got worse. Participant 39 explained, "… it would come down to a checklist of how bad my hearing was really … but some bad experiences along the way of missing out and knowing that would miss and whatever. That will be part of it." Participant 47 similarly responded, "… if it (hearing) was diagnosed that I need hearing aids in the future … Then somehow I will find a way to balance the, the books."

Table 7: Thematic Array relating to the Health Belief Model Perceived Barriers Construct.

If you wanted to help with your hearing loss, what would stop you from getting it? (12)	**13. I am too young to have a hearing loss. (8)**	**14. It would be uncomfortable to wear hearing aids. (10)**	**15. Hearing aids aren't worth the trouble. (10)**
Financial cost. (10)	I am too young to have a hearing loss. (4)	Having a hearing aid would be more uncomfortable than not having anything in your ear. (4)	Hearing aids are worth the trouble under certain conditions. (5)
Nothing. (2)	I am not too young to have a hearing loss. (4)	Other things I have in my ears are uncomfortable, so hearing aids could be too. (3)	Hearing aids are not worth it because of the cost. (2)
		No opinion, mainly due to a lack of experience. (3)	Based on other observations of others and media, hearing aids are not worth it. (2)

16. Hearing aids make people look old. (10)	17. Most people say hearing aids don't work well. (10)	18. Hearing aids are ugly. (10)	19. I usually notice when someone is wearing hearing aids. (9)
Yes, hearing aids do make people look old. (6)	I am not sure if hearing aids work well because I have not had enough experience with them. (4)	Hearing aids are ugly, particularly old or cheap ones. (5)	Most of the time I notice people wearing hearing aids. (8)
No, hearing aids do not make people look old. (3)	I have seen people who have hearing aids that work well. (3)	New hearing aids are hard to see. (4)	
	I have not asked people how their hearing aids are because I do not want to appear judgemental. (2)	I have no opinion. (4)	

If there was a check list, what things would need to be done before you could take that step to get help for your hearing loss? (12)	20. If I had a hearing loss I would do everything I could to avoid wearing hearing aids. (10)	Other than paying for the hearing aids yourself, what might be another sources of funding? (6)
That I could actually afford the intervention. (10)	If I needed hearing aids I would use them. (4)	Work and Income New Zealand. (3)
The hearing would have to be "bad enough" to do something about. (5)	I will explore all options before using hearing aids. (3)	Some form of government support. (3)
The hearing aids would have to be small so they are hard to see. (3)	I am not sure if I would avoid hearing aids or not. (3)	Accident Compensation Corporation. (2)
		KiwiSaver. (2)

Note: These are themes the researcher drew from the data with respect to perceived barriers to gaining access to hearing aids. The number in the parentheses indicates the number of participants that answered that statement, question or contributed to that theme.

3.3.5. Perceived Self-Efficacy

Table 8 shows what the participants thought about their potential ability in seeking intervention for a hearing loss, whether that was seeking services or using HAs. This included how perceptions regarding access to service or HA information. Nine out of twelve participants had heard or seen some form of advertising for a hearing clinic. Participant 16 said, "I mean, there are hearing clinics, you see … billboards, … (you) see it in the paper and TV from time to time." Participant 38 observed, "You see it advertised on TV… you'll drive around and see something… now you're seeing more of them (hearing clinics) pop up."

Participant 25 similarly stated, “There’s these hearing places all through Christchurch. You know they’re always advertising…”

Seven participants reported that they would opt to consult with their GP first, for a variety of reasons. Participant 15 shared, “Wouldn’t have a clue (about where to get a hearing test) … it would be going blind to the GP.” Participant 38 indicated financial factors associated with physician-related appointment, “I’ll go to the doctor, and doctor will refer me to the hospital … If I had the money, I’d just go to a clinic. I wouldn’t bother with the doctor.” Participant 47 said “(I) don’t trust capitalism! … So stick with your GP to start with and go through channels …”.

When the participants were asked if they had heard good aspects about HAs three individuals were neutral, reporting they had not heard good or bad things. Three participants indicated they had heard good things about HAs. Participant 39 said, “…he (former colleague) was one of those (who) occasionally (asked people) to ‘speak up’ type people because it’s ‘not clear’ so you had to be sure… (to talk to the) one ear that works… he’s got a hearing aid now… and yep, very different… communication with him is not a problem.” For participant 44 positively asserted, “Yeah, people actually being able to hear again… She (family member) actually rung up…and she could actually hear me! First time she’s been able to hear me! (on the phone).”

If participants had received assessment and were recommended to proceed with a HA trial, five participants reported that they had a clear idea of where they would go for service. Participant 18 said, “Same as the last one (statement 22) … through the same process. Doctors, (hearing clinic), sort of thing.” Four participants responded, indicating that they were not quite sure where they would go to trial HAs. Participant 16 stated, “I don’t actually know where to go, but hey, it wouldn’t take long to find out.”

Table 8: Thematic Array relating to the Health Belief Model Self-Efficacy Construct.

21. I have heard good things about hearing aids. (10)	**22. I know where to go to get my hearing tested. (12)**	**23. I know where to get hearing aids if I were to need them. (9)**
I have not really heard good or bad things about hearing aids. (3)	I have heard or seen advertising about hearing clinics. (9)	I would go to the place I mentioned in statement 22. (5)
Hearing aids are good because of the fact that people are able to hear again. (3)	I would go to my GP first and go from there. (7)	I am not quite sure where I would get hearing aids from. (4)
I have heard some good things about hearing aids. (2)	I am aware that there are many hearing clinics across Christchurch. (6)	
Most of the good things I have heard about hearing aids come from TV commercials. (2)	I am not really sure where I would go to get my hearing tested. (5)	

Note: These are themes the researcher drew from the data in reference to perceived self-efficacy, regarding access to hearing aid services and information. The number in the parentheses indicates the number of participants that answered that statement, question or contributed to that theme.

3.3.6. Cues to Action

Table 9 shows the themes the researcher saw in the data from the interviews with participants regarding what might help them seek hearing services. Eight of the 12 participants reported that once there is damage to your hearing there is nothing you can do to fix it. Participant 25 received information through the work place indicating, "Oh, because the health and safety meetings that we've gone to. The people have said, they've explained there's little hairs inside your (ears) or something … when they get damaged, they're gone and they're gone for good. They've made it brutally (honest), when you go on courses they try to scare you and, they do quite a good job, generally. They say once you've damaged them, that's it, they're gone. And hearing aids can only amplify what you've got left. They can't create hearing." Participant 20 reported receiving information via several sources. "Because hearing loss is permanent… That's my belief and I've been told in the past, and you hear it on

the radio when you lose your hearing, that's it, it's gone. You can't, you can never really recover it back… I remember one doctor telling me … If you've permanently lost some hearing in your ear … that's it…".

Seven participants had views similar to participant 50 regarding hearing loss remediation. "… hearing aids is something you can do about it." Participant 15 agreed about the potential for hearing rehabilitation, "I'm thinking there's stuff you can do about it, like mitigate it, but there's probably not much you can do about it, to reverse it. So, I'm guessing it's like eyesight. Where you can mitigate the impairment you have by wearing glasses…".

Table 9: Thematic Array relating to the Health Belief Model Cues to Action Construct.

24. Once you have hearing loss there's not much you can do about it. (12)	**25. It would be difficult to use hearing aids because they are so small. (10)**	**26. Hearing aids are easy to lose. (10)**
When your hearing gets damaged, it is gone for good. (8)	I am not sure how difficult it will be to use hearing aids until I try myself. (10)	I am not sure if hearing aids are easy to lose, it might depend on the kind of person you are. (6)
Hearing aids is something you can do to mitigate hearing loss. (7)		I imagine that hearing aids are easy to lose. (4)
I am not sure if hearing loss is permanent, there are potentially some operations that could fix it. (3)		

Note: These are themes the researcher drew from the data in connection with cues to action. The number in the parentheses indicates the number of participants that answered that statement, question or contributed to that theme.

3.4. Underlying Beliefs

After the researcher interviewed all 12 participants, transcribed the interviews and analysed the data, the research findings revealed the underlying beliefs and subjective impressions the participants had, at the time of the interview.

The first observation was that the participants were aware of the field of audiology, but they might not necessarily know what an audiologist is (or does). For example, participant

15 said, "… like if she (partner) knew I had hearing loss and I'm sure it would be a classic situation of I would defer it and she'd be the nagging wife going 'come on you need to get your hearing checked, go to the doctor or go to whatever-you-guys are called.'" When discussing where one gets hearing tested participant 18 stated, "I guess, like I said before (private hearing clinic), I remember that advert, seeing that advert, or, just, I guess go to the GP and then I don't know if they do it or would pop me onto a specialist so yeah…" On the same topic participant 38 shared, "Yeah, you see it advertised on TV, ha-ha, (private hearing clinic) isn't it? … Ah, otherwise, umm, yeah hospital, you know? … Well, I'll go to the doctor, and doctor will refer me to the hospital or a tester or something like that."

Some participants indicated a lack of clear referral pathway. Participant 20 recalled an experience he had with his GP "I've even asked the doctor and he looked at me blankly, I asked once. Cause I said 'look, I think I'm going deaf, what do I do?' And he goes 'oh you don't come to see me that's for sure.' He goes, 'well the Internet I suppose.' You know? He said, 'you go see a specialist', that's what his words were 'go see a specialist.'"

Some participants shared their observations regarding audiology practice, clinical costs, and service-related monetary gain. Participant 47 said, "… The fact of the matter is they're going to try and sell you the best hearing aid they possibly can and to make the money. Nothing comes for free in this world, I don't care what anybody says … but you're not going to walk in and get a free hearing aid test and if you suddenly find that you qualify and even if you don't qualify… be rest assured these companies are going to try and sell them to you… they're in there for business." When participant 33 was asked if he had heard anything good about HAs he replied, "Yeah… that's the only good things I've heard (from television advertisements) … Those are the guys that are selling it! So, you know, they just want to make money." Participant 20 stated, "… but then again … what would be suitable for me? Because all of them will be interested not in me as a person, but selling what they've got. And

they'll try to sell the most expensive thing. In order, to make the most money out of me, rather than give me the right information because the most spectacular, super-duper hearing aid may not be personally suitable for me. It might be something in the middle of the road, it could be something nice and cheap. And that's where it comes down to it. I mean, you've got the get the one that's the right fit … to do the right job."

A third finding was that there were personal beliefs around hearing and HAs, but such beliefs were not always supported by factual data. For example, regarding the link between age and hearing loss, participant 39 said, "Well I guess, yeah with old age, I don't have knowledge, I imagine these things seem to deteriorate as we get older, so after all it'll probably won't get any better." Participant 47 stated, "The older you get the, the more likelihood it is you get your hearing is going to deteriorate. That's just common sense and face it, hearing is an age related, can be an age-related, or unless you've got something rapidly wrong – hearing is an age-related issue as a rule."

These personal beliefs may run deeper than just linking age with hearing loss as participant 15 explained it "I guess you might be getting some biases here. I guess, (I'm what) you'd call an ableist … as in two arms, two legs, ears that work, eyes that work. I may not say it, but if I meet someone with a disability, that can be hearing I guess, it's that I'll double take or, … I'll do internal judgment… It sounds really bad… I know what it's like living in society, like I'm on the bus and the bus stops and then these two people in a wheelchair (get on) and it takes three times as long to get them on… I've never ever say anything, but… like it's still irritating me because… I've got somewhere to go. And the thing is, is that I know that I'm not the only person like that… I know other people go 'that's fine, it's not an inconvenience' … but I still feel like an inconvenience now having to ask people to repeat stuff if I don't get it. I guess I have quite set beliefs around this stuff, I've got no idea where I got them from."

Later in the discussion participant 15 shared why he thought HAs would not be "worth the trouble" — "I watch some kind of old British comedy and… it is like 30 years old but it's those kinds of tropes around hearing aids that, like (people with hearing aids) they're always fiddling with them and the volume's wrong, and like it's just a clunky… it becomes a key feature of their life, that they're constantly having to adjust… I think, they come from TV those sorts of beliefs. Well, they're cultural. Yeah because other people have them as well and they can be misinformed … but of course you can't educate the masses because you're the one with the expertise in this tiny little area… I'm sure hearing aids are much better than they were in 'Faulty Towers' but the perception still exists, I'm just guessing that it's like that."

For some participants, concerns about judgement or shame appeared to play a role in coping strategies for hearing loss, and rationales for why audiological services would not be sought. Participant 18 indicated he would not want to have a hearing test partly due to, "… stigma, and hearing aids and that sort of thing. I'd rather just be oblivious to the problem." When the researcher asked if stigma was something participant 18 thought much about he replied, "I never really thought of it before, but I guess it is… because I've said it a couple of times now". When talking on the phone participant 50 shared that he confirmed appointments by email or text because, "I make out that I'm very forgetful, but it's not I'm not forgetful – it's just my way of confirming that I've heard it right." Participant 20 said if he had HAs, "I don't want to look like I'm that deaf, that I have to wear a hearing aid, you know, because they (other people) go 'oh he's deaf, you know, oh we've got to be pitiful', or you know, (it) opens (you) up for some nasty comments, you know. People, unfortunately people are judgemental and that sort of thing."

Viewpoints emerged from discussion regarding how to change negative perceptions around hearing loss and hearing remediation. Participant 15 replied, "I don't know! … they've got ads on TV these days for everything, but it's on cutting the stigma for that kind of

stuff is really hard. I mean, they've done it for like men and mental health, but, elsewhere with some guys I know there's still that thing about men and hearing aids. It's some kind, like I've got a public weakness that I'm letting everyone know, I don't know, it's more in older men I think." Participant 47 talked about "Communication education. It takes a generation to do that sort of stuff, you know? You know that the drink driving figures are still older people that come through school in my generation … but majority of your (the researcher's) generation have 'grown up' and don't 'drink and drive' … That's because that's what they've grown up with … it takes a generation, possibly a generation and a half to get a message like that through."

The fourth finding, if the participants thought their hearing was "bad enough" (other than cost), then most other barriers would not be an issue. When the researcher asked the participants what "checklist of items" needed to be checked off for a hypothetical hearing loss that required intervention to receive appropriate services: "cost" came up 10 times, "appearance of the hearing aid" came up three times, then other barriers including "finding the location" and "ease of the process" were identified once. When the researcher asked if any of the issues raised from statements 14 to 19 on the HBQ would stop the participant from seeking intervention for a hearing loss, participant 50 said, "No, wouldn't be an issue at all." Participant 44 stated, "If (my hearing) got bad enough, I'd probably get over most of those things, it'd be just the price." When participant 15 was asked if he would do everything he could to avoid wearing HAs he shared, "I wouldn't do everything I could to avoid wearing them, but … it would just be a cost-benefit (analysis). When the annoyance of not having one outweighed the, my perceived annoyance of having to wear one, when the cost-benefit swings to, yep (laughing) … that's how I'd make the decision."

4. Discussion

4.1. Comparing the Literature and the Results

Generally, participants believed that they were susceptible to HI as 10 of 12 participants explicitly associated HI with ageing, or noise exposure. Associating HI and age is a common form of stigma (Preminger & Laplante-Lévesque, 2013; Southall, Gagné, & Jennings, 2010; Johnson, 2012; Saunders G. H., Chisolm, & Wallhagen, 2012) and can potentially have long term detrimental effects. The build-up of negative stresses can cause an individual with HI to socially isolate themselves (Southall, Gagné, & Jennings, 2010; Saunders G. H., Chisolm, & Wallhagen, 2012), or after an abundance of negative stresses cause them to hit "rock bottom" (Southall, Gagné, & Jennings, 2010, p. 809). There are other stigmas associated with HI and HAs, which is discussed in more depth in section 4.4.

Ten of eleven participants said that a HI would negatively affect relationships with family and friends, showing that, overall, participants believed that the consequences of HI can be severe. Words and phrases like: "frustration" (participant 20), "annoying" (participant 15), "agitated" (participant 43), "irritated" (participant 39), "grumpy" (participant 44), "lack of communication" (participant 20), "arguments" (participant 18) and "take a back seat" (participant 50) – relating to social situations came up during the interviews. All these consequences are secondary effects of HI that are well-documented in literature (English, 2002; Southall, Gagné, & Jennings, 2010; Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010; Kaplan, 2001; Tye-Murray, 2015).

These secondary effects can lead to a range of different emotions like fear, anxiety, and stress (Tye-Murray, 2015; Ronch, 2001; Hogan, 2001). Of the 11 participants that commented on the statement "It would be stressful to have a hearing loss" (statement 12 on HBQ), all of them agreed that it would be stressful (mostly due to the reasons stated above).

For an individual who constantly experiences communication breakdowns, and considering the emotions that can be experienced, this can seriously affect an individual's self-image (English, 2002; Johnson, 2012; Tye-Murray, 2015). As a reaction to communication breakdown an individual with HI may start to develop maladaptive communication strategies, or start avoiding social situations altogether, which could lead to depression (English, 2002; Tye-Murray, 2015).

Statement eight on the HBQ was "The benefits of using hearing aids would outweigh the costs." Nine of twelve participants thought that the benefits of HAs would outweigh the costs as long as it was affordable. This shows that the majority of the participants believed that intervention for HI was helpful or beneficial, however, this came with the condition of being able to afford such interventions. This is consistent with the most common barrier to help-seeking for HI in this study, which was the financial cost. For five participants the financial cost was the only barrier preventing them from seeking hearing services. Financial cost is a factor of influence, often one that discourages help-seeking, as described in previous studies (Laplante-Lévesque, Hickson, & Worrall, 2010; Laplante-Lévesque, et al., 2012; Knudsen, Nielsen, Kramer, Jones, & Laplante-Lévesque, 2013; Meyer, Hickson, Lovelock, Lampert, & Khan, 2014) However, some participants were sceptical of the benefits of HAs. As participant 15 explained "I'm not sure where they're at with hearing aids, would (hearing aids) give that kind of benefit as I get from wearing glasses." This scepticism is likely to be another barrier for participants until they are better informed.

For five participants, they were waiting for the point where their HI was "bad enough" (participant 44) before doing something about it. This agrees with the literature that reports it is not enough for an individual with HI to know about their HI, but the impact of their HI on their daily life needs to affect them enough for them to want to do something about it (Duijvestijn, et al., 2003; Laplante-Lévesque, Hickson, & Worrall, 2010; Knudsen, Öberg,

Nielsen, Naylor, & Kramer, 2010; Meyer & Hickson, 2012; Meyer, Hickson, Lovelock, Lampert, & Khan, 2014; Saunders G. H., Frederick, Silverman, Nielsen, & Laplante-Lévesque, 2016a). This may indicate a general lack of understanding about the consequences of HI and the effect of rehabilitation (Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010) or it could relate back to the financial cost. Participant 47 acknowledged that although money was a barrier, he felt that if, "… 'I need them (HAs), I need them.' You either go into debt, nothing unusual there, or you find a way, cut your costs and transfer money." Participant 33 similarly stated, "Save some money for it. Just buy cheap food (laughs). Because whenever I've saved up for something like that I've starved… That's just what you do, you know?" This is thought-provoking because it is easy to think that because someone is of "low socioeconomic position" that money is always going to be an insurmountable barrier for them. Yet, participant 47 and participant 33 have described strategies which they have used or considered if they wanted to purchase something. Participant 25 articulated the balancing process saying, "… it's a bit of a hard one because you sort of think to yourself, 'well, why don't you get hearing aids, you know, and just overcome the costs?' You know, but you gotta ask yourself what you're going to give up, there's… other things you've got to give up in order to have those hearing aids, and sacrifices and in my personal circumstances I choose not to do that." Overall, participants have expressed that the financial cost of HAs is a barrier, however some participants articulated that if intervention was necessary they would be willing to make changes to get the required intervention.

Nine of the twelve participants had heard or seen advertisements for a hearing clinic. Many of the participants did not necessarily know the exact location of the hearing clinic, however, it was enough to serve as a starting point if they wished to pursue hearing services. This indicates good cues to action particularly through advertising, which agrees with

Knudsen and colleagues' (2013) observation that advertising is a factor that encourages hearing help-seeking.

Even though advertising for private audiology clinics appeared to be a cue to action, at the time of the interview, seven of the participants still preferred to first go to their GP first. Three participants would choose to see the GP first because they were either unfamiliar with the process or due to financial circumstances. Two participants would go to the GP first because they, "do not trust capitalism" (participant 47) and two participants did not explicitly state why they would go to the GP first. The personal beliefs just described may have been influenced by audiology being a relatively small field (Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010). This means that audiologists need to be well-known by other healthcare professionals, such as GPs. However, as participant 20 described in section 3.4, his GP was unsure of the referral pathway, but told him to see a specialist. This indicates that audiology may not always be an immediate referral consideration for HI. Audiology not being the immediate source of referral has been seen in other studies, and in the case of participant 20, was probably due to a lack of information or understanding about audiological services (Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010; Knudsen, Nielsen, Kramer, Jones, & Laplante-Lévesque, 2013). Other studies have shown that some GPs do not necessarily think HAs are an appropriate intervention especially for older adults (Gilliver & Hickson, 2011), but some also may not know the appropriate referral pathways (Meyer & Hickson, 2012)

With seven of twelve participants choosing to see their GP to start the process of hearing help-seeking, reinforces that the GP has a great influence on whether an individual may or may not seek services based on their expertise (Duijvestijn, et al., 2003; Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010; Knudsen, Nielsen, Kramer, Jones, & Laplante-Lévesque, 2013; Meyer & Hickson, 2012; Meyer, Hickson, Lovelock, Lampert, & Khan, 2014; Carson, 2005). Taking into consideration that some GPs think HAs are not an effective

intervention to HI (Gilliver & Hickson, 2011), or do not know the most effective referral pathway (Gilliver & Hickson, 2011; Meyer & Hickson, 2012), this finding emphasises the need to have good professional relationships with GPs and to ensure they have the right information regarding referrals and audiological rehabilitation.

It is unclear why some participants believed that audiologists are out to make money. A recent MarkeTrak survey of hearing impaired individuals in the United States found that 93% of HA owners and 83% of non-HA owners were satisfied with the service of their hearing care professional (Rogin & Abrams, 2016). In 2013, 84% of people who received HAs through Accident Compensation Corporation were "satisfied" or "very satisfied" (Magill & Stirling, 2013, p. 18) with their audiologist.

Advertising by private hearing clinics gave many participants a point to start their hearing help-seeking process. Participant 25 stated "There's these hearing places all through Christchurch. You know they're always advertising…". Even if participants did not know where a hearing clinic was located they still had a strategy of how they would start the help-seeking process. Participant 16 stated, "I don't actually know where to go, but hey, it wouldn't take long to find out." Participant 15 shared, "(I) wouldn't have a clue (about where to get a hearing test) … it would be going blind to the GP." This generally shows that the participants believed they could seek advice or intervention for HI if they desired to do so.

4.2. The Hearing Beliefs Questionnaire and Semi-Structured Interviews

During the study participants were sent a HBQ questionnaire to complete (Appendix H) and at a later date, they came into the university to clarify their answers through a semi-structured interview with the researcher. Through the interviews it became apparent that the participants and the researcher did not always interpret the statements on the HBQ and the prepared questions the same way. For example, statement 2 on the HBQ said, "It is possible that I will lose my hearing". Some participants interpreted that as losing all (as opposed to

losing some of) their hearing, and other participants simply interpreted it as a deterioration of their hearing. Participants answered statement 22 and 23 in different ways, as many participants knew of hearing clinics where they could access services, but they did not always know the exact location of these clinics. As a result, some participants disagreed with the statements because they did not know the exact location of the hearing clinic. While other participants agreed with the statement because they knew of the hearing clinic (regardless if they knew the location or not). Statement 24 of the HBQ stated "Once you have hearing loss there's not much you can do about it." This statement was interpreted in different ways. Some of the participants agreed with the statement considering a physiological point-of-view (knowledge gained through workplace health and safety training), saying that once hair cells were damaged it was permanent. While other participants disagreed with the statement because they viewed HAs, and other devices or strategies as something an individual could do about hearing loss.

Statements 6 to 8, 14 to19 and 25 to 26 (regarding the impact of HI and HA use) on the HBQ were all worded in general terms compared to many of the other statements (which were more personal with the use of "I"). On the whole, participants spoke from their personal experience. However, many started answering these statements in general terms, especially for the HA questions as none of the participants had HAs at the time of the interview. When participants spoke in general terms they often spoke of what they had observed from other people.

Many of these confusions or misunderstandings were clarified through the follow up semi-structured interview between the participant and the researcher. However, if the questionnaires were used in a quantitative way with no follow up interview, and if statement scores were averaged, it is likely that some of the averages would have large error bars due to a wide variety of interpretations of some statements. This could be related to why the five

constructs of the HBQ are only able to explain 36% of the total variance (Saunders G. H., Frederick, Silverman, & Papesh, 2013). This potentially has effected other research that has used the HBQ in a quantitative way. Saunders and colleagues hope to develop a more robust HBQ (Saunders G. H., Frederick, Silverman, & Papesh, 2013). Perhaps having slightly clearer and more personal statements might decrease some of the confusion helping it to be more robust. Alternatively, the way the questionnaire is delivered could be changed to a more interview style rather than a questionnaire. However, this may introduce interviewer biases (Bowling, 2005; Okamoto, et al., 2002) and would be difficult to administer to a large population.

4.3. Help-Seeking and Low Socioeconomic Position

This section takes into consideration people of low socioeconomic position and why help-seeking may be difficult. This section considers what the literature says about help-seeking, living in low socioeconomic communities and what participants have shared in the study.

From the literature a factor that greatly influenced hearing help-seeking was the observed effect of HI on an individual's daily life (Duijvestijn, et al., 2003; Laplante-Lévesque, Hickson, & Worrall, 2010; Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010; Meyer & Hickson, 2012; Meyer, Hickson, Lovelock, Lampert, & Khan, 2014; Saunders G. H., Frederick, Silverman, Nielsen, & Laplante-Lévesque, 2016a), the influence of the GP and CPs (Duijvestijn, et al., 2003; Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010; Knudsen, Nielsen, Kramer, Jones, & Laplante-Lévesque, 2013; Meyer & Hickson, 2012; Meyer, Hickson, Lovelock, Lampert, & Khan, 2014; Carson, 2005).

The literature regarding people living in low socioeconomic households and communities indicated that there was less trust in other people within the community (Drukkera, Kaplana, Feronc, & Van Os, 2003), they are more likely to have fewer years of

education (Béria, et al., 2007; Helvik & Krokstad, 2009), increased risk of experiencing HI (Dawes, et al., 2014; Feder, David, Ramage-Morin, McNamee, & Beauregard, 2015; Béria, et al., 2007), and if they suffer from HI, they are more likely to be unemployed or underemployed (Emmett & Francis, 2014). In this study, three out of twelve participants were either unemployed or underemployed, and four participants had not completed high school education. This may indicate that the sample in this study could be similar to the low socioeconomic population described in the literature.

When considering the literature on help-seeking, it appears that an important factor for increasing hearing help-seeking is social engagement. The influence of participating in social activities and social pressure from CPs an increase help-seeking for an individual with HI. (Duijvestijn, et al., 2003; Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010; Knudsen, Nielsen, Kramer, Jones, & Laplante-Lévesque, 2013; Meyer & Hickson, 2012; Meyer, Hickson, Lovelock, Lampert, & Khan, 2014; Carson, 2005). More social engagement increases the number of situations where an individual can notice the impact of HI on their daily activities (Duijvestijn, et al., 2003; Laplante-Lévesque, Hickson, & Worrall, 2010; Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010; Meyer & Hickson, 2012; Meyer, Hickson, Lovelock, Lampert, & Khan, 2014; Saunders G. H., Frederick, Silverman, Nielsen, & Laplante-Lévesque, 2016a). However, this is in contrast with deprivation literature which indicates increased social isolation. This could be due to not trusting other people within the community (Drukkera, Kaplana, Feronc, & Van Os, 2003), being underemployed (or unemployed) (Emmett & Francis, 2014), and being lower educated (Béria, et al., 2007; Helvik & Krokstad, 2009). A tighter budget generally means less money to spend for social occasions. This is supported by what was said by some participants. Participant 33 explained, "you hardly see people… when you're poor… so you don't have much of a social life." Participant 38 said his daily activities would not be greatly affected by a hearing loss because,

"I suppose that will just more come under interaction with people, when hearing and needing to hear what's going on. Whereas at the moment I don't … if I was (working), yeah, probably would."

Some of the consequences of HI were explained in section 1.3.2 and 4.1. Primarily it is the break down in verbal communication (English, 2002), but there are secondary consequences too. The secondary consequences of communication breakdown for a person with HI can lead to a potential range of different emotions like stress, anxiety, and fear. These emotions could affect their self-image (Tye-Murray, 2015; Ronch, 2001; Hogan, 2001; English, 2002; Johnson, 2012) and breakdowns in communication can lead to maladaptive strategies, social isolation or even to depression (English, 2002; Tye-Murray, 2015). It is possible that individuals who live in low socioeconomic areas already have factors that increase social isolation. And if the individual also has HI, the consequences of both low socioeconomic position and HI could compound each other. This combination of an individual living in deprivation who also experiences HI could potentially be in a difficult position to seek help for HI. As the factors that will strongly influence them to seek help for HI (i.e., CPs and social interactions) are the very things that they are lacking because of their socioeconomic position.

4.4. Beliefs about Hearing Impairment and Hearing Aids

Participants within this study expressed a range of views regarding HI and HAs, mostly related to stigma. For example, participant 15 said, "I guess I have quite set beliefs around this stuff, I've got no idea where I got them from … I think, they come from TV those sorts of beliefs (tropes around hearing aids) … They're cultural. Yeah because other people have them as well and they can be misinformed."

This is something that has been identified in the literature, where advertisements or anecdotes from other people have created misunderstandings or inaccurate information

(Blood I. M., 1997), and media have contributed to the stigma by creating comedy at the expense of people with HI or HAs (Johnson, 2012). Another theory is that the stigma towards HAs was created by the HA industry itself (Johnson, 2012). Laplante-Lévesque and colleagues (2012) found that people from Australia, Denmark, England and the United States displayed many similar hearing behaviours (including decisions of why not to seek help for HI) despite the different hearing services provided in these countries (Laplante-Lévesque, et al., 2012). It would be very difficult to pinpoint the exact reasons why people in these countries have similar hearing behaviours. It could possible that influences of pop-culture or advertising have influenced the underlying assumptions about HI and HAs.

These beliefs are potentially so ingrained in our culture that people would prefer their HI to remain as hidden as possible for fear of being judged. For example, participant 18 mentioned the stigma connected with HAs, "I guess, stigma, and hearing aids … I'd rather just be oblivious to the problem … with the hearing aid … you know, not cool". If participant 20 required HAs the cosmetics of the HA would be important, "… in order to prevent people from being … judgemental, or pitiful". Participant 50 disguises his HI by stating, "I make out that I'm very forgetful, but it's not I'm not forgetful – it's just my way of confirming that I've heard it right." Participant 15 said, "… with some guys I know there's still that thing (stigma) about men and hearing aids, it's … like (saying) I've got a public weakness that I'm letting everyone know (about)". The participants expressed (personal or general) fears of not being accepted, judged or weak because of the presence of HAs. This perception of being judged are examples of the "Hearing Aid Effect" (Blood I. M., 1997, p. 60). This agrees with the studies by Blood (1997) and Johnson (2005) that although the HA effect was first reported about over 30 years ago, it still exists in the psyche of many people today and people seeking to use HAs need to be counselled on this.

With regards to HA technology, participant 16 said, “It’s a bit like anything, I guess, … the smaller it is, … probably the rate at which it improves your hearing, convenience, look, and so on”. Participant 39 commented, “That’s probably why people spend thousands of dollars on decent hearing aids that are hidden rather than buying these cheap things that everybody can see. What’s the difference? It’s what other people think. As well as effectiveness, I dare say.” Participant 15 stated, “I’ve always imagined them (family member’s HAs) to be clunky …unwieldy … maybe it’s because he’s, he can’t afford a proper one, I’m not sure”. When asked if HA benefit out weights the cost, participant 16 said, “Depending on how big and clumsy they are, or small and effective …”. There appears to be this assumption that large HAs are not proper HAs or are older technology, and that smaller HAs are more technically-advanced or better – which has been observed in literature as well (Kochkin, 1994; Bevan, 1999). The idea of concealing hearing devices is something is not a new idea (Washington University School of Medicine, 2005). However, this trend continues today as some participants expressed they would prefer more cosmetically appealing HAs if they required them.

Participant 47 said that education is the way to break down the stigma of HI, citing educating people about drink driving as an example. Participant 15 talked about how television advertisements were effective in reducing the stigma of men’s mental health. Both participants said that reducing stigma will take time and is hard. This agrees with one of the two strategies mentioned by Johnson (2012) in reducing the HA effect. The second strategy was to address the psychological needs of the individual wearing HAs as shown in Doggett and colleagues’ study (1998). There is a large responsibility for the audiologist to equip the individual with appropriate amplification, and ensure the individual is in the correct frame of mind to persevere for improved communication.

4.5. Limitations of the study

4.5.1. Sampling Bias

Even though research advertisements for this study were placed throughout the city in a range of different places, on the social media site "Neighbourly" and through email, there were still many people who would not have been aware of this research project. People who do not use "Neighbourly," look at noticeboards, or use email would have been unaware of this research project.

Dawes and colleagues (2014) found that ethnic minorities and people of low socioeconomic position have a greater chance of experiencing HI. Other than one Māori participant, every other participant identified themselves as at least being part New Zealand European. With most of the participants having a similar ethnic background, it is likely that not every barrier has been identified within this research project, especially if there are different cultural views on health or hearing. However, this research can serve as a good starting point for the Christchurch context.

The lack of ethnic diversity in this project could be due to a few reasons. The researcher was only able to conduct interviews in English and perhaps there were people interested in the study, but not comfortable enough to be interviewed in English. Another possible reason could be that the way the research was advertised was not the most effective way to reach a wide range of different ethnicities and the researcher needed to think of other ways to connect with those communities. Another reason could be that being part of a research study is not a normal activity to participate in for people of other cultures.

4.5.2. Data Bias

There may be a bias in the data because of the way the research was conducted. The researcher was seeking to investigate help-seeking, however the researcher was asking the participants to do the very thing that was being investigated. The literature shows that there

are factors that encourage and discourage help-seeking (Laplante-Lévesque, et al., 2012; Carson, 2005; Laplante-Lévesque, Hickson, & Worrall, 2010; Knudsen, Öberg, Nielsen, Naylor, & Kramer, 2010; Duijvestijn, et al., 2003) and these factors are constantly weighed up against each other (Carson, 2005). In getting potential participants to take this step, to participate in the study they may already have reached a point where their scales are out of balance (using the imagery described by Southall and colleagues (2010)). They may be ready to seek services for HI because they have had too many negative experiences or many positive experiences and this study has provided them the opportunity to take the first step in that process. Where this picture is most complex though, is when the scales are still in balance – where the individuals with HI are experiencing negative stresses, but not enough that they have pushed them over the edge. This group of individuals could potentially give great insight into how these costs and benefits are constantly weighed up against each other. However, this can be the hardest group to engage with as they are not considering help-seeking due to denial or a lack of information (Southall, Gagné, & Jennings, 2010).

Another potential source of data bias limitation is the inexperience and the researcher's ability to interview particularly in a research setting. Due to the researcher's lack of experience it is possible that he missed opportunities to probe deeper and failed to draw out some key beliefs or attitudes that some participants had. As a consequence, the researcher may only have gained surface-level answers and missed out on data which could have built more depth or revealed other themes within the data.

Therefore, it is possible that the information gathered in this thesis is incomplete due to many participants having already overcome many of the personal barriers in their help-seeking journey and the researcher's inexperience in drawing out deeper beliefs or attitudes during interviews.

4.6. Clinical Implications:

This research showed that cost, lack of perceived benefits and waiting until an individual's hearing was "bad enough" were barriers to using HAs as an intervention to HI. One way to facilitate help-seeking is by education. One possible way to increase education is by developing professional relationships with other specialists, particularly in health and safety. Many of the participants worked in industries where loud noise was common, and a few participants mentioned receiving some information through health and safety meetings. Developing stronger professional networks with health and safety officers may encourage training in a wider range of industries. Training a range of people how to protect their natural hearing and inform them about the negative primary and secondary consequences of HI. Education may help reduce stigma and negative perceptions about HI and the use of HAs. If a decrease in stigma resulted, this may encourage people with HI to seek hearing services.

Another professional link that could be developed is with the GP. In this study seven participants expressed that they would choose to see the GP if they wanted to seek services for HI. This is important for people living in low socioeconomic position because they are more likely to be socially isolated and have less resources to use. If they seek help from the GP for HI or inquire information about hearing intervention, it is crucial for the GP to be informed about HI, hearing interventions and know the most effective referral pathway.

Therefore, working to improve trust in professionals like GPs, health and safety officers and other health professionals could be important in the help-seeking process. Part of this could be sharing information about the negative consequences of HI, including the secondary physiological effects. Developing stronger associations with other health professionals may help clarify and streamline referral pathways. This may mean less appointments overall and a smaller cost on the resources for people seeking hearing services. Financial cost was identified as a barrier in this study to help-seeking and intervention for HI.

Therefore, informing other professionals about the range of hearing interventions available maybe helpful to them knowing that there are different interventions if required. Some examples of other hearing interventions other than hearing aids include, communication strategies, low-cost assistive technology, auditory training and AR groups or programmes.

Educating other professionals needs to be combined with the work at the clinic by audiologists and hearing care professionals having a client-centered service delivery method. This includes a holistic rehabilitative approach to the way clinicians care for clients and CPs in their care. For example, having an awareness of the client's psychological needs, ensuring that they and their CPs understand how life can be affected by HI, and that they have realistic expectations of intervention. Part of the client-centered service is employing a shared decision-making process, involving the client and their CPs in the rehabilitation procedure. This approach to rehabilitation is important for people in low socioeconomic positions because of their reduced financial and social resources. This may require clinicians to seek different sources of funding or interventions they use less often like if that is the best solution for the client.

Clinicians can also advocate for additional and larger government HA subsidies and reimbursement for other (low- or no-cost) audiologic rehabilitative services.

4.7. Future Research

Possible future research could include investigating factors that could increase the help-seeking behaviours of individuals with HI who are susceptible to social isolation (especially people with HI, from low socioeconomic neighbourhoods or older adults).

Investigate if ethnic minority populations who are experiencing HI have barriers that prevent them from seeking hearing services. This could be aided by conducting surveys or interviews in their mother tongue.

Another option is to see how prevalent the “Hearing Aid Effect” (Blood I. M., 1997, p. 60) is within the wider New Zealand population and to see if there are differences in beliefs depending on age or other factors.

5. Conclusion

This thesis has researched the factors that increase and decrease hearing help-seeking among those experiencing HI, and what are some characteristics of living in deprived neighbourhoods. This appears to be the first research project to investigate hearing help-seeking for men of low socioeconomic position in New Zealand. This was done by recruiting participants to conduct qualitative semi-structured interviews to explore if there were barriers that inhibited them from seeking hearing services, and to see what underlying beliefs or attitudes may contribute to this. If there were barriers for this population, the second part of the study was to investigate what those barriers were.

Participants thought they were susceptible to HI due to age or noise exposure. The participants believed that the consequences of HI could be severe because it can affect relationships with friends and family. Participants believed that amplification would be beneficial to them if they could afford it. The current barriers to seeking hearing services for their HI were cost, lack of perceived benefit of HAs and some participants would continue to wait until their hearing got worse. Private hearing clinic advertisements were a helpful cue to action and this served as a starting point for many participants. This contributed towards the self-efficacy of participants, where all of them expressed they would go to a hearing clinic or to their GP if they wanted to seek help for HI.

Ten of the twelve participants said that financial cost was a one of their barriers to seeking hearing services, with five participants saying it was the only barrier. Five participants also would wait until their hearing was ‘bad enough’ before seeking out hearing services. Some of the participants expressed feelings or attitudes that are in line with the “Hearing Aid Effect” (Blood I. M., 1997, p. 60). Some participants wanted small HAs so that they would not be judged by other people. To reduce the stigma and change the underlying

perception of HI and HAs requires two things: (1) educating the public, and (2) counselling the individual using amplification (Johnson, 2012; Doggett, Stein, & Gans, 1998).

The GP remains a key person for many participants. There is a need to make sure that general information about HI, the consequences of untreated HI and the appropriate referral pathways are well-communicated and understood by other health professionals, especially the GP.

6. Appendix

Appendix A: Letter from the Human Ethics Committee

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

HUMAN ETHICS COMMITTEE
Secretary, Rebecca Robinson
Telephone: +64 03 364 2987, Extn 45588
Email: human-ethics@canterbury.ac.nz

Ref: HEC 2016/25

13 May 2016

Phillip Luey
Communication Disorders
UNIVERSITY OF CANTERBURY

Dear Phillip

The Human Ethics Committee advises that your research proposal "Potential Help Seeking Barriers for Working Men from Low Decile Areas" has been considered and approved.

Please note that this approval is subject to the incorporation of the amendments you have provided in your email of 6th May 2016.

Best wishes for your project.

Yours sincerely

pp. R. Robinson

Jane Maidment
Chair
University of Canterbury Human Ethics Committee

Appendix B: Research Advertisement

Help Wanted!

Are you a male between 18-64?

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Is your hearing not what it used to be?

Are you finding it hard to make ends meet?

Have you been in to see someone about your hearing?

We are looking for:

- Men aged between 18-64,
- That have worked in the last 12 months
- Who have a hearing loss,
- But have not yet sought services for their hearing loss.

If this is you, we want you to take part in a study by the University of Canterbury. We want to see if men from low decile areas seek services for their hearing loss and what may be some barriers. We would like to hear your story. People that are asked to come into the University will get a $10 petrol voucher and a $30 Westfield voucher.

You will be asked to for about two hours of your time in three parts:

1. *Fill some surveys about your hearing and current financial situation.*
2. *Fill in a survey about your hearing beliefs and attitudes.*
3. *Come into the University of Canterbury for a hearing check and be interviewed about your hearing beliefs.*

More information? Take a tab & email phillip.luey@pg.canterbury.ac.nz or call **(03) 343 9640** by **Friday 12 August 2016**

Hearing help seeking actions of men from low decile areas. phillip.luey@pg.canterbury.ac.nz (03) 343 9640
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Hearing help seeking actions of men from low decile areas. phillip.luey@pg.canterbury.ac.nz (03) 343 9640

Appendix C: Information Sheet

Research Information Sheet

Study Title: *Potential Help Seeking Barriers for Working Men from Low Decile Areas*

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Research supervisor
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Dept of Communication Disorders
University of Canterbury
Phone: (03) 364 2987 ext 7077

Why am I invited to be in this study?

You are invited to take part in the study: *Potential Help Seeking Barriers for Working Men from Low Decile Areas.* We've invited you to take part in this study because we believe that you will be able to give a valuable perspective about the study focus.

What is the aim of the study?

We want to know if there are things stopping you from seeing someone about your hearing loss. If there are, we would like to find out what those barriers are.

Who do we need for the study?

We need working men from low decile areas. It is also important that you are able to travel to the University of Canterbury and can converse in English.

What will happen in the study?

If you agree to be in this study, you will be asked to fill in an information sheet telling us about yourself and two questionnaires. These are included in this packet along with a return envelope.

If you are eligible for the study, Phillip will send out a different questionnaire about your hearing beliefs for you to complete and return. You will also need to be available for a hearing test and an interview.

Phillip will contact you to arrange a time for your hearing check and interview, which will take place at the University of Canterbury. The hearing check and interview will be done on the same day with a short break in between the testing and interview.

The hearing check will be conducted by one of the researchers. You will be asked to press a button every time you hear a beep through a pair of headphones. The beeps are used to find the quietest sounds you can hear at different pitches.

The hearing check will be conducted by one of the researchers. You will be asked to press a button every time you hear a beep through a pair of headphones. The beeps are used to find the quietest sounds you can hear at different pitches.

After a short break, Phillip will conduct an interview with you (which will be audio recorded for research purposes). This will take a bit more than an hour. The transcript of the interview and the audio recording will be the property of the researchers. But, you may choose to receive a copy of your interview transcript. Please tick the box on the consent form if you want a copy of the transcript of your interview.

Participants that are required to come to the university will receive a $10 MTA voucher and a $30 Westfield voucher. However, all participants will receive a communication strategies pamphlet for participating in the study.

What are your rights?

You do not have to take part in the study – it is entirely up to you. You can withdraw from the study at any time, without giving a reason. This will NOT affect any future interactions you have with the University of Canterbury. If you do withdraw, we will remove all information relating to you, as long as you let us know within one week after your interview. After that time, we will not be able to remove the information you've already given because it will not be practical to do so.

What are the benefits of the study?

There are no direct benefits to you. But, we hope this study will help us better understand the help seeking behaviours of working men from low decile areas.

What are the risks of the study?

There are no direct risks for you being in this study. But, you may feel distressed talking about your feelings and attitudes towards help seeking. You may have whanau or a friend present to help you deal with any distress. You may also feel distressed if the hearing check shows your hearing loss to be worse than you expected. You will find a list of support services at the bottom of this letter.

Will your information stay private?

The results of the study may be published, but your identity will be kept private throughout the study. Information you give us will not be anonymous, but no information that could identify you will be used in any reports in the study. Only the researchers listed at the top of this letter will see any information we collect.

We will keep the data in a locked filing cabinet and in a password-protected computer. We will destroy the data five years after we finish the study.

Has this study been approved?

The study has been checked and approved by the University of Canterbury Human Ethics Committee. If you have a problem or complaint about this research, contact: The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch humanethics@canterbury.ac.nz (03) 364 2987 ext 45588).

What do you do next?

If you agree to take part in this study, please contact the researchers:

Email: phillip.luey@pg.canterbury.ac.nz
Phone: (03) 364 2987 ext 7077

Thank you for taking time to read about this study.

Who can you contact if you feel distressed?

Lifeline: 0800 543 354

Who can you contact if you want more information about hearing loss?

New Zealand Audiological Society: 0800 625 166

Ministry of Health Healthline: 0800 611 116

Ministry of Health Disability Support: 0800 373 664

Appendix D: Consent Form

CONSENT FORM
(Please return this copy to the researchers)

Study title: *Potential Help Seeking Barriers for Working Men from Low Decile Areas*

The information about this research study has been explained to me to my satisfaction. I have had the chance to ask questions. I know what I need to do to take part in the study.

I know that I can choose whether or not I take part in this research.

I know that I may withdraw from the study until one week following the interview session, without penalty. If I withdraw, my information will also be withdrawn.

I know that any information or opinions I give will be kept private to the researchers. I know that any published or reported results will not identify me. I know that a thesis is a public document and will be available through the UC Library.

I know that all data collected for the study will be kept in locked and secure facilities or in password protected computers and will be destroyed after five years.

I will be given a copy of this form and the Research Information Sheet. I know that I can contact the researchers for more information. They are:

Phillip Luey: phillip.luey@pg.canterbury.ac.nz
Dr Rebecca Kelly-Campbell: rebecca.kelly@canterbury.ac.nz, (03) 364 2987 ext 7077

If I have any complaints, I can contact the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz, (03) 364 2987 ext 45588).

Consents:
I would like a copy of the final results of the study.

Yes ☐ No ☐

I would like a copy of my interview transcript.

Yes ☐ No ☐

By signing below, I agree to take part in this research project.

Name (please print): _____

Signature: _____ Date: _____

Participant Information

Please answer each question honestly and to the best of your ability

Date: _____ Current age: _____Gender: _____

1. What ethnic group do you belong to?

□	New Zealand European	□	Tongan
□	Maori	□	Niuean
□	Samoan	□	Chinese
□	Cook Island Maori	□	Indian
□	Other, such as Dutch, Japanese, Tokelauan. Please state: _____		

2. What is your relationship status? (please tick one box)

□	Single	□	Never married
□	Married	□	In a committed relationship
□	Widowed	□	Divorced
□	Separated		

3. What is the net annual income of your household? (please tick one box)

□	$0 – $25,000	□	$25,000 - $50,000
□	$50,000 - $75,000	□	$75,000 - $100,000
□	more than $100,000		

4. What is the highest level of education you completed? _____

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NZiDep: New Zealand Index of Socioeconomic Deprivation for Individuals

The following few questions are designed to identify people who have had special financial needs in the last 12 months. Although these questions may not apply directly to you, for completeness we need to ask them of everyone. Please circle "Yes" or "No" for each of the following questions.

In the last 12 months (ending today),

1. Did you *yourself* get income from any of these sources? (a) Sickness Benefit, (b) Domestic Purposes Benefit, (c) Invalid's Benefit	Yes	No
2. Have you been out of paid work at any time for more than one month?	Yes	No
3. Have you *personally* received help in the form of clothes or money from a community organisation (like the Salvation Army)?	Yes	No
4. Have you *personally* made use of special food grants or food banks because you did not have enough money for food?	Yes	No
5. Have you *personally* continued wearing shoes with holes because you could not afford replacement?	Yes	No
6. Have you *personally* been forced to buy cheaper food so that you could pay for other things you needed?	Yes	No
7. Have you *personally* gone without fresh fruit and vegetables, *often*, so that you could pay for other things you needed?	Yes	No
8. Have you *personally* put up with feeling cold to save heating costs?	Yes	No

Appendix G: Screening Test for Hearing Problems

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Screening Test for Hearing Problems (STHP)

The purpose of this questionnaire is to find out how you communicate in your daily life. These questions ask about your interactions with other people. Please circle "Yes" or "No" for each of the following questions.

Do you have trouble communicating with others in the following situations?

1. You're at the dinner table with family	Yes	No
2. You're at a restaurant ordering food or drinks	Yes	No
3. You're talking on the telephone when you're at work or a place of business.	Yes	No
4. Someone's talking to you while you're watching TV or listening to the stereo/radio.	Yes	No
5. You're talking with someone in an office.	Yes	No
6. You're at a dinner party with several other people.	Yes	No
7. You're at a meeting with several other people.	Yes	No
8. You're at home and someone is talking to you from another room.	Yes	No
9. You're having a conversation at a social gathering while others are talking nearby	Yes	No

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Hearing Beliefs Questionnaire (HBQ)

These questions ask you about your hearing health behaviours. *They do not assume you have hearing impairment or that you wear hearing aids.* Please read each statement. Then, circle the number that reflects your opinion about that statement.

0 = Completely Disagree
5 = No opinion
10 = Completely Agree

1. My hearing will likely get worse in the future.										
0	1	2	3	4	5	6	7	8	9	10
2. It is possible that I will lose my hearing.										
0	1	2	3	4	5	6	7	8	9	10
3. I am not likely to lose my hearing because hearing loss doesn't run in my family.										
0	1	2	3	4	5	6	7	8	9	10
4. I've heard you should get your hearing tested now and then.										
0	1	2	3	4	5	6	7	8	9	10
5. Having a hearing loss would limit my daily activities										
0	1	2	3	4	5	6	7	8	9	10
6. When people have hearing loss, their relationships with family and friends suffer.										
0	1	2	3	4	5	6	7	8	9	10
7. Having a hearing loss negatively impacts a person's job performance.										
0	1	2	3	4	5	6	7	8	9	10
8. The benefits of using hearing aids would outweigh the costs.										
0	1	2	3	4	5	6	7	8	9	10
9. I would worry if I had a hearing loss.										
0	1	2	3	4	5	6	7	8	9	10
10. I don't go out much so having a hearing loss wouldn't be a big problem for me.										
0	1	2	3	4	5	6	7	8	9	10
11. If I had a hearing loss, I would worry about missing important information during visits with my doctor.										
0	1	2	3	4	5	6	7	8	9	10
12. It would be stressful to have a hearing loss.										
0	1	2	3	4	5	6	7	8	9	10
13. I am too young to have a hearing loss.										
0	1	2	3	4	5	6	7	8	9	10

0 = Completely Disagree
5 = No opinion
10 = Completely Agree

14. It would be uncomfortable to wear hearing aids.										
0	1	2	3	4	5	6	7	8	9	10
15. Hearing aids aren't worth the trouble.										
0	1	2	3	4	5	6	7	8	9	10
16. Hearing aids make people look old.										
0	1	2	3	4	5	6	7	8	9	10
17. Most people say hearing aids don't work well.										
0	1	2	3	4	5	6	7	8	9	10
18. Hearing aids are ugly.										
0	1	2	3	4	5	6	7	8	9	10
19. I usually notice when someone is wearing hearing aids.										
0	1	2	3	4	5	6	7	8	9	10
20. If I had a hearing loss I would do everything I could to avoid wearing hearing aids.										
0	1	2	3	4	5	6	7	8	9	10
21. I have heard good things about hearing aids.										
0	1	2	3	4	5	6	7	8	9	10
22. I know where to go to get my hearing tested.										
0	1	2	3	4	5	6	7	8	9	10
23. I know where to get hearing aids if I were to need them.										
0	1	2	3	4	5	6	7	8	9	10
24. Once you have hearing loss there's not much you can do about it.										
0	1	2	3	4	5	6	7	8	9	10
25. It would be difficult to use hearing aids because they are so small.										
0	1	2	3	4	5	6	7	8	9	10
26. Hearing aids are easy to lose.										
0	1	2	3	4	5	6	7	8	9	10

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